

Appendix H

**Biological Resources**

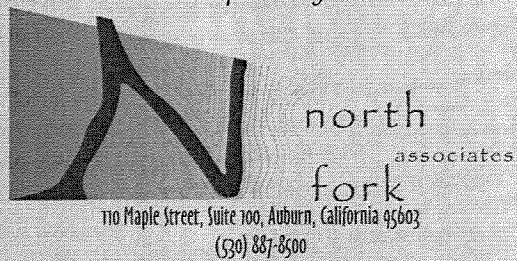
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CONCEPTUAL WOODLAND MITIGATION PLAN  
FOR THE  
PATTERSON SAND AND GRAVEL EXPANSION

*Prepared for:*

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*Prepared by:*



June 10, 2004

# CONCEPTUAL WOODLAND MITIGATION PLAN

## FOR THE

### PATTERSON SAND AND GRAVEL EXPANSION

#### INTRODUCTION

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Patterson Sand and Gravel proposes to expand production of their sand and gravel operations to include 884 acres along the Bear River in Placer and Yuba Counties. The expansion plan would entail adding phases to the currently permitted phase over the next 60 years. Approximately 326 acres are currently authorized for mining (Phase 1) and the expansion area encompasses 365 acres (Phases 2 through 6). The remaining 193 acres would be preserved as oak woodland (83 acres) and the Bear River corridor (110 acres).

To offset mining impacts to biological resources, North Fork Associates, working with Patterson Sand & Gravel and Carlton Engineering, developed this conceptual Biological Mitigation Plan for the proposed mine expansion area. The intent of the plan is to establish the mitigation framework for the ongoing reclamation of the site and to provide the basic mitigation and reclamation program for analysis in the EIR. Reclamation will occur concurrent with mining activities.

#### SETTING

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The project site is located north and south of the Bear River, and is within the historic floodplain. All current and proposed mining will occur outside of areas designated waters of the United States (Figure 1).

The entire area contains deep, coarse soils, primarily sand and larger grained material. In the nineteenth century, placer mining in the Sierra Nevada washed a huge amount of sediment down the Bear River drainage, leaving deep deposits in the project area. Since Camp Far West Dam was constructed in 1962, periodic high flood flows were reduced which in turn effectively squeezed the river into a narrower corridor. Highest release out of Camp Far West during the January 1997 floods was approximately 34,000 cubic feet per second. These flows were relatively contained and the riverbed maintained its current location.

The project area is located on a high bench adjacent to the river. The river elevation is approximately 91 feet above sea level and the relatively flat adjoining bench currently supporting oak woodland and walnut orchard is approximately 113 feet above sea level.

The deep coarse soils of the floodplain support annual grassland and oak woodland vegetation. Valley oak is the most common tree species. Shrubs are also abundant in many areas. The project area contains elderberry shrubs. The habitat types in the expansion area are described briefly below and in more detail in the Biological Resources Assessment dated November 2000.

## **AFFECTED RESOURCES**

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Several resources will be affected by expanded mining. Table 1 provides a summary of impacts that are expected to occur in each phase.

**Table 1**  
**Resource Impacts for Each Mining Phase**

<b>Phase</b>	<b>Elderberry Impacts</b>	<b>Oak Tree Impacts</b>	<b>Oak Woodland Impacts</b>	<b>Riparian Woodland Impacts</b>
1	141	Permitted	Permitted	0
2	29	718	39	0
3	8	1110	40	0
4	13	502	15	0
5	29	267	7	3
6	8	0	0	0
<b>Total</b>	<b>228 Shrubs</b>	<b>2,597 Trees</b>	<b>101 Acres</b>	<b>3 Acres</b>

### **Oak Woodland**

Expansion plans are expected to affect 101 acres of oak woodland containing approximately 2,600 trees (36 trees/acre). Some affected areas support denser woodland, perhaps 45 trees an acre, whereas other areas are more open woodland having 15 or fewer trees an acre. In denser areas, the number of trees includes numerous small diameter saplings growing under more mature canopies. Unless the larger tree dies, many of these smaller trees are unlikely to survive, especially since they are competing for the same resources.

### **Riparian Habitat**

Approximately three acres of riparian habitat in an abandoned ditch on the north side of the river will be affected by the expansion project.

### **Valley Elderberry Longhorn Beetle Habitat**

Over 400 elderberry shrubs occur on the site. The first five phases of the project will impact 228 plants, or about 58 percent of the shrubs present. Three of the shrubs have exit holes documenting use by the valley elderberry longhorn beetle.

## **CONCEPTUAL MITIGATION PLAN**

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The conceptual mitigation plan contains several elements. These have been or will be expanded into more detailed plans before the overall mitigation strategy is implemented.

### **Preserves**

Approximately 83 acres of oak woodland will be retained in three preserves, all on the north side of the river. Management of these areas will be included in the overall long-term management plan for preserved and reclaimed areas.



The Bear River Preservation Corridor encompasses 110 acres in the lower floodplain of the river. This area will be preserved in perpetuity, and may serve as a location for experimental riparian habitat restoration.

### **Oak Woodland and Riparian Habitat Restoration**

The goal of the woodland and riparian restoration project is to restore oak woodland and riparian habitat on 212 acres on both sides of the river. Trees will be planted in five-year increments unless catastrophic failure or other unforeseen circumstances require a different schedule. At the end of the 60-year project, the plan expects to have 7,420 living trees of various age classes.

The actual number of trees planted to meet the stated goal is unknown, but can be estimated based on several assumptions. Assuming an 80 percent survival rate, 9,275 trees will need to be planted. This amounts to approximately 773 trees planted (or 21 acres) for each five-year cycle.

Approximately 55 acres are available immediately for implementing the oak and riparian restoration plan. Forty of these acres are located in the northeastern end of Phase 1 on the south side of the river. This area currently has seasonal wetland and open water channels, areas that are conducive to riparian planting. The existing open water pond and marsh creation demonstration project are also located in this area. The remaining 15 acres are the proposed elderberry/oak planting area on the north side of the river.

The initial 55-acre planting area is half of the oak woodland impacted, and should be planted to capacity by 2015, just before the Phase 1 reclamation is completed that will provide additional planting areas sometime after 2010. Table 2 is an approximate planting schedule based on the assumptions discussed in this section.

**Table 2**  
**Approximate Planting Schedule**

<b>Year</b>	<b>Total Planted</b>	<b>Approximate Survival</b>
2004	773	619
2009	1546	1238
2014	2319	1857
2019	3092	2476
2024	3865	3095
2029	4638	3714
2034	5411	4333
2039	6184	4952
2044	6957	5571
2049	7730	6190
2054	8503	6809
2059	9276	7428

The plant schedule in Table 2 is approximate, and is dependent on the availability of suitable reclaimed land. The schedule will be adjusted to accommodate the reclamation schedule.

The location of all trees will be obtained with a sub-meter global positioning system. This information will be used to produce a GIS map. In addition, a grid system using t-bar posts will be established to aid in monitoring.

### **Emergent Marsh Creation**

Approximately 50 acres of emergent marsh will naturally grow on the margin of the 300-acre lake when reclamation is complete. This amount could vary somewhat depending on water depths along the margin.

### **Valley Elderberry Longhorn Beetle Mitigation**

The 228 elderberry shrubs that would be affected by the project will be transplanted to the 15-acre elderberry and woodland mitigation site north of the river. Slightly more than 1,000 elderberry seedlings and 770 associated species will also be planted in this area. Shrubs will be monitored for 15 years, and a survival rate of 60 percent is the desired goal. Implementation of this mitigation is the subject of a separate mitigation and monitoring report.

## **PERFORMANCE STANDARDS**

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An adaptive management strategy is proposed for this mitigation project, and no specific performance standards are described here. Approximately 773 trees will be planted during each five-year cycle, and 80 percent survival rate is expected. Planting rates will be adjusted up or down to compensate for survival rates that vary from 80 percent. If catastrophic failure occurs, the resource manager will meet with agency officials and other experts to determine the cause of the failure. If a cause can be determined, the mitigation strategy will be changed to accommodate those findings.

## **MONITORING**

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Monitoring will occur in two phases: annual monitoring and five-year monitoring. Annual monitoring will be much less intensive than the five-year monitoring. Each year the site will be walked by individuals knowledgeable about the planting scheme. The purpose of annual monitoring will be to spot large-scale planting failures so that corrective measures can be taken. Annual monitoring may take place on more than one day, and the extent and timing of the monitoring will be determined in part by weather patterns for that year.

Every five-years more intense monitoring will take place. The purpose of this monitoring scheme is to quantitatively document the number of living trees. Using the t-bar grid system, monitors will count all trees within a grid. The sum of trees in all the grids will be the number of trees living in each five-year span. Monitors will then determine whether the number of living trees at that time is consistent with the number needed to reach the long-term goal, and this information will dictate the number of trees needed for the next planting cycle.

## **REPORTING**

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Brief reports will be prepared annually. These will indicate in general terms what was done during that year and will provide a qualitative assessment of the conditions in the mitigation areas. A more comprehensive report will be prepared to coincide with the five-year planting cycles. Reports will be sent to the County Planning Department, California Department of Fish and Game, Corps of Engineers, and U.S. Fish and Wildlife Services. Copies will be sent to other agencies and interested parties on request.

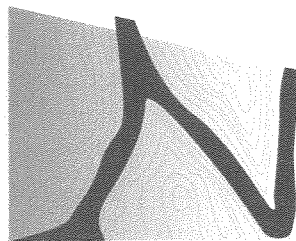
**VALLEY ELDERBERRY LONGHORN BEETLE  
MITIGATION PLAN FOR THE  
PATTERSON SAND & GRAVEL/  
DAMON ORCHARD EXPANSION AREA**

**Placer and Yuba Counties, California**

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November 2000

**VALLEY ELDERBERRY LONGHORN BEETLE  
MITIGATION PLAN FOR THE  
PATTERSON SAND & GRAVEL/  
DAMON ORCHARD EXPANSION AREA**

Placer and Yuba Counties, California

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# VALLEY ELDERBERRY LONGHORN BEETLE MITIGATION PLAN FOR THE PATTERSON SAND & GRAVEL/ DAMON ORCHARD EXPANSION AREA

Placer and Yuba Counties, California

November 2000

## INTRODUCTION

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Elderberry plants occur throughout the Bear River Corridor. In the process of conducting the biological assessment for the proposed mining expansion project, an elderberry survey was conducted. Plants were located, evaluated and mapped on the entire project site (including the existing mining areas). The resulting elderberry location map was input into the overall biological impacts evaluation of the project. A separate permit to obtain authorization for impacts to Valley Elderberry longhorn beetle habitat is underway. Elderberry impacts are regulated by the U.S. Fish & Wildlife Service under the Federal Endangered Species Act.

The project site is located in northwestern Placer County and southern Yuba County. The site is approximately 2.5 miles northeast of Sheridan in sections 25, 30, 31, and 36, Township 13 & 14N, Range 5 & 6E of the Camp Far West 7.5 minute topographic quadrangle (Figure 1). Coordinates to the approximate center of the project area are: 39°01'46" N and 121°21'08" W.

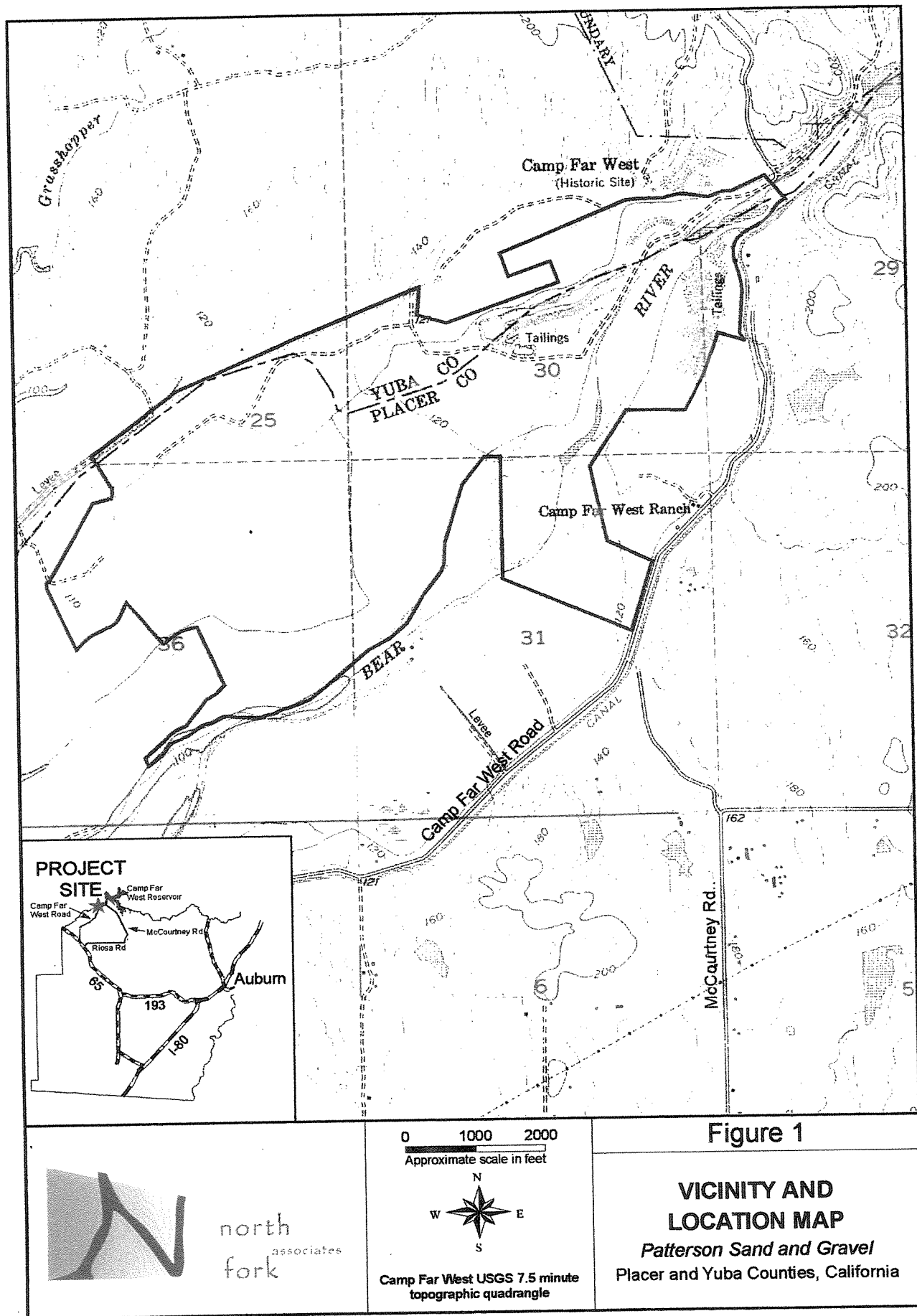
The project site borders the Bear River. Most of the elderberry plants occur in deep coarse sandy substrate and are associated with Valley Oak woodland habitat. The site has been mined continuously since the 1940s for sand and aggregate products. Patterson Sand & Gravel and the S.M. Damon Estate own the land and the mineral rights of their respective properties. The current mining operation is managed through Patterson Sand & Gravel.

## METHODOLOGY

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In keeping with the conservation guidelines published by the USFWS in 1999 (Appendix B), the project site has been surveyed for the presence of both elderberry shrubs and evidence of the VELB. Surveys were conducted in 1996, 1998, and 2000. Elderberry locations were mapped on an aerial photograph and transferred to a topographic basemap. Locations were digitized in AutoCAD to produce an Elderberry Location Map (1"=400') (see map pocket). Data collected for each elderberry plant included: elderberry location, number of stems >1" at ground level, stem diameter at ground level, presence or absence of VELB evidence, percent living estimates, assessment of transplantation candidacy, and the identification of the three nearest neighbor species. Data collected is summarized in Appendix A.





**Figure 1**

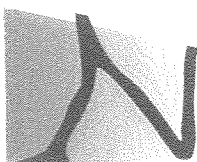
**VICINITY AND  
LOCATION MAP**

*Patterson Sand and Gravel*  
Placer and Yuba Counties, California

0 1000 2000  
Approximate scale in feet



Camp Far West USGS 7.5 minute  
topographic quadrangle



north  
fork  
associates

The project is divided into 7 phases, 6 of which contain elderberry plants (Phase 7 contains no elderberry plants). Data sets in Phases 1 and 6 (65 percent of total elderberry plants) contain a complete breakdown of stem sizes by size class (i.e., numbers of one inch stems, three inch stems, and five inch stems). Stem size data collected in Phases 2, 3, 4, and 5 (35 percent of total elderberry plants) recorded only the number of stems over one inch in diameter. Using the data in Phases 1 and 6 along with spot checks conducted in October 2000, we extrapolated stem size class data for these four Phases. The same percentages in Phases 1 and 6 were applied to Phases 2 through 5.

Determination of the number of seedlings and associated native plantings follows the USFWS guidelines minimization ratios table for nonriparian replacement. Information on number and sizes of stems at ground level and the presence or absence of exit holes in the stems determines the ratio of seedling plantings. Estimates of the numbers of seedlings needed were figured for each Phase of the project site and the data were pooled.

## RESULTS

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The entire project site, including preservation areas, contains over 400 elderberry shrubs. Areas slated to be mined in the future contain, at present, 228 elderberry plants and a total of 767 stems over 1 inch in diameter (see Elderberry Location Map in map pocket). Three elderberry plants show signs of VELB evidence in Phases 1 through 6.

Sixty-seven percent (512) of all stems were between 1 and 3 inches in diameter. Stems between 3 and 5 inches in diameter (214) accounted for 28 percent of the total and stems over 5 inches (41) accounted for 5 percent of all stems.

The nearest three plant species located adjacent to each evaluated elderberry plant were recorded on a data sheet. Knowledge of surrounding plant data will help re-create the same natural conditions in the mitigation area. Nearest neighbor plants are listed here in descending order of abundance: elderberry (*Sambucus mexicana*), valley oak (*Quercus lobata*), interior live oak (*Quercus wislizenii*), Himalayan blackberry (*Rubus discolor*), California black walnut (*Juglans californica*), California blackberry (*Rubus ursinus*), Coffeeberry (*Rhamnus californica*), foothill pine (*Pinus sabiniana*), and black locust (*Robinia pseudoacacia*).

## MITIGATION

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The surface mining plan for the project site follows a 60-year schedule implemented in 7 phases. Phase 1 is in progress as the ongoing operation. Phase 7 production begins in 2058. Elderberry plants exist in all the Phase areas except for Phase 7.

It is proposed that all elderberry mitigation activities (Phases 1 – 6) be done at one time. A summary of all phases is shown Table 1.

**Table 1. Summary of Elderberry Mitigation for All Mining Phases**

	PHASES						Totals
	1	2	3	4	5	6	
Number of Elderberry Plants	141	29	8	13	29	8	228
Number of stems > 1" & < 3"	303	99	23	27	48	12	512
Number of stems > 3" & < 5"	124	41	9	13	26	1	214
Number of stems > 5"	30	3	1	2	5	0	41
Total stems > 1"	457	143	33	42	79	13	767
Number of plants w/ VELB evidence	1	0	0	0	2	0	3
Number of Elderberry seedlings	646	190	44	59	115	14	1068
Number of Native seedlings	460	143	33	42	79	13	770
Acreage needed for planting	5.3	1.4	0.3	0.4	0.8	0.2	8.4

### **Elderberry Transplantation**

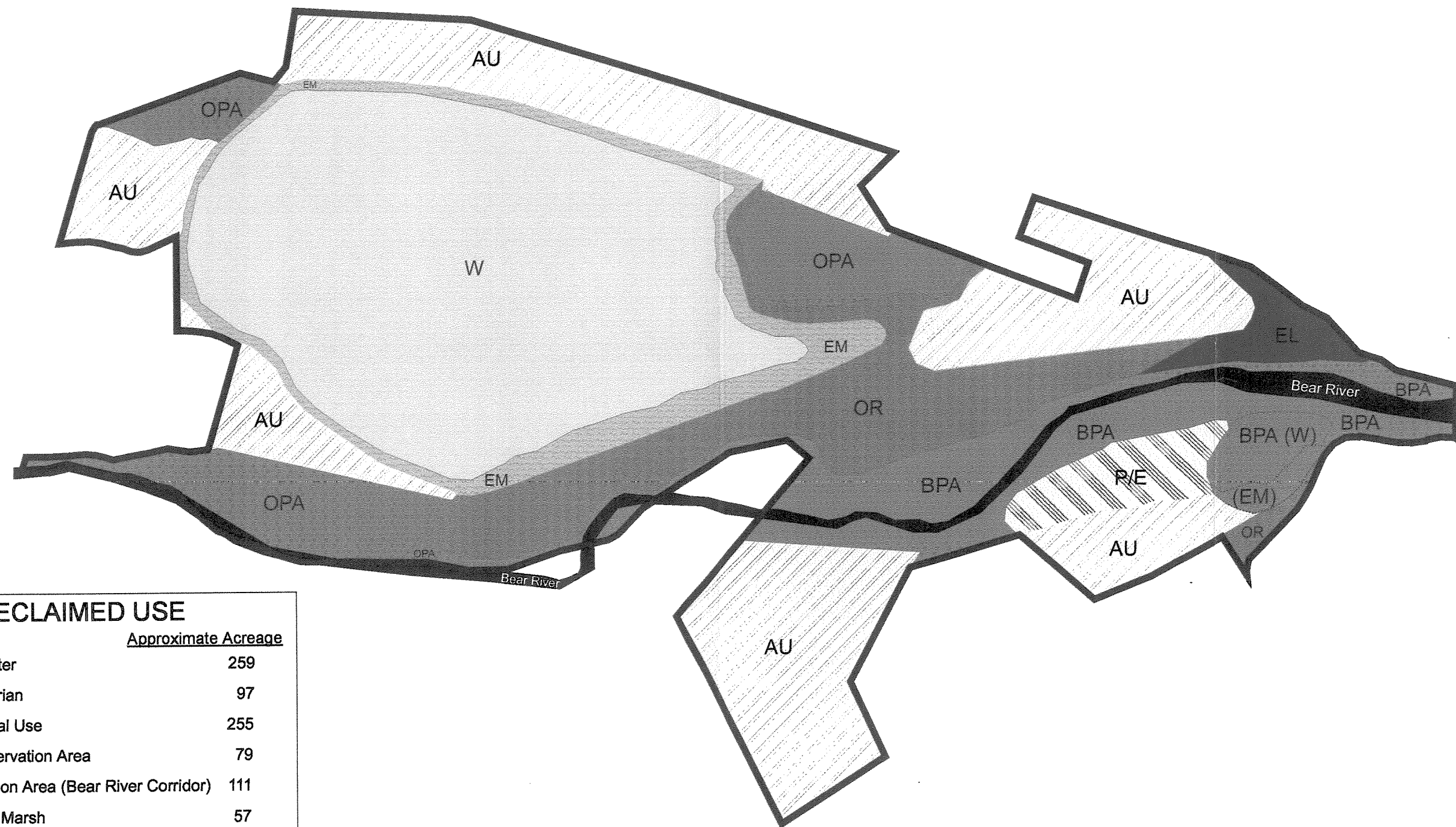
The transplanting of elderberries will occur during the dormancy period ( November to mid-February). Prior to transplantation, plants will be trimmed back 3 to 6 feet from the ground or to 50 percent of its height (whichever is taller). Equipment, such as front-end loader or backhoe, will be used to remove as much of the root ball as possible. As soon as a plant is removed it will be replanted without delay. Ensure that adequate soil moisture is present in the conservation area prior to replanting. No fertilizers or pruning paint may be used. Water as necessary during the first summer.

### **Conservation Area**

The conservation area where all transplanted elderberries, elderberry seedlings, and native species are planted is located on the northeast border of the project site (Figure 2). The area is approximately 15 acres in size, and although the area is nearly one third larger than required by the minimization ratios, it more closely approximates the natural density of a nonriparian (oak woodland) location. The area is well removed from both current and future mining activities and should benefit from the isolation. An orchard is located ¼ mile to the west, which should provide an adequate buffer from any possible pesticide or herbicide drift.

### **Planting Area Size**

The planting area size shall be 1800 square feet for every transplanted elderberry shrub plus as many as 10 associated plants (elderberry seedlings and native seedlings). Each plant will have its own watering basin (3 feet in diameter by 6 inches high, with an 8 inch wide berm).



# RECLAIMED USE

Approximate Acreage

W	Open Water	259
OR	Oak Riparian	97
AU	Agricultural Use	255
OPA	Oak Preservation Area	79
BPA	Preservation Area (Bear River Corridor)	111
EM	Emergent Marsh	57
P/E	Potential Preserve/Enhancement Area	22
EL	Elderberry Mitigation Area	15



0 1000  
Approximate Scale in Feet

November 20, 2000

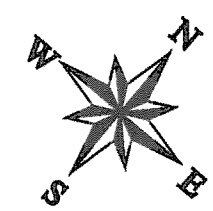


Figure 2

**FINAL RECLAMATION PLAN  
BIOLOGICAL COMPONENTS  
PATTERSON SAND and GRAVEL**  
Placer and Yuba Counties, California

## **Weed, Litter, and Chemical Control**

Weedy species and other nonnative plants should be removed at least once a year for the first 5 years by mechanical means only as herbicide use is prohibited unless approval is given by the USFWS. All trash found on the conservation site will be removed within 10 days of appearance. No herbicides, pesticides, fertilizers, or other chemicals may be used or sprayed within 100 feet of the conservation area.

## **Fencing and Signs**

The conservation area will be enclosed around its entire border by permanent fencing. The USFWS must approve the fencing prior to installation. A minimum of two prominently placed signs stating that the area is habitat for the federally threatened valley elderberry longhorn beetle must be used. Signs must also be approved by the USFWS. Both fencing and signage must be maintained in perpetuity and repaired or replaced within 10 working days if found damaged or destroyed.

## **Long Term Protection**

Valley elderberry longhorn beetle habitat in the conservation area will be maintained in perpetuity. The applicant will provide the USFWS with a deed restriction, conservation easement, or deed transfer to a resource agency or private organization for management. An official, recorded copy of the deed restriction, conservation easement, or deed transfer along with supporting documents outlining the details of the conservation program must be submitted to the USFWS prior to project initiation.

Adequate funds must be set aside to guarantee that the conservation area is maintained in perpetuity. The applicant will provide the USFWS with documentation stating that a dedicated fund has been set up for the long term management and maintenance.

## **MONITORING**

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The conservation area, elderberry plants, and native species plantings will be monitored over a 15-year period to ensure the success of the mitigation plan. Surveys will be conducted in years 1, 2, 3, 5, 7, 10, and 15.

### **Access**

Personnel from the USFWS and the California Department of Fish & Game (CDFG) will be given full access to the conservation area to monitor the site.

### **Surveys**

During each survey year, the site will be visited at least two times between mid-February and the end of June by a qualified biologist hired by the applicant. Data collected from each visit must include the following:

- A census of all adult beetles present, including information on location, condition, and behavior
- Record the number and location of all exit holes

- Evaluate the general health of the transplanted elderberries and native plantings, including size and condition
- Evaluate the condition of the conservation area, including fences, signage, and weed control
- Evaluate the general habitat conditions and identify current and future threats to the stability of the conservation area

## **Reports**

The surveying biologist will submit a written report for each year the monitoring schedule specifies. The report will include all beetle activity, condition and survival rate of elderberry plants and associated native plants, number and location of beetles and exit holes observed, and an assessment of real or perceived (future) threats to the conservation area and suggest possible remedies. The report, along with copies of field notes, photographs, or other raw data, will be distributed to USFWS (Chief of Endangered Species, Sacramento Office) and the CDFG (Supervisor, Environmental Services, Sacramento and Staff Zoologist, California Natural Diversity Data Base, Sacramento) prior to December 31<sup>st</sup> of the same year the monitoring was performed.

One copy of the report, including original field notes, photographs, and correspondence will be sent to the California Academy of Sciences (Librarian, California Academy of Sciences, San Francisco) prior to December 31<sup>st</sup> of the same year. A copy of the receipt from the Academy library or its library catalog number will be provided to the USFWS for each and every monitoring year.

## **Success Criteria**

Minimum survival rate is established as 60 percent for both the entire monitoring period and every year in the monitoring period. Applicant will replace failed planting to above the 60 percent level. The USFWS will make any determinations necessary following unusual circumstances such as floods or other "acts of god."



## APPENDIX A

**Patterson Sand & Gravel  
Phase 1 Elderberry Plant List  
November 2000**

Plant #	Evidence	1" - 3"	3" - 5"	> 5"	% Living	1st Plant	2nd Plant	3rd Plant
1	N	2			50	BP	RD	QW
2	N	1			40	JC	PF	BP
3	N	8	4		70	BP	QW	QW
4	N	8	3		45	QL	QL	BP
5	N	3	1		60	SM	QL	RD
6	N	2	1		25	PF	QL	JC
8	N	1			90	JC	SM	PF
9	N	1	1		40	JC	SM	PF
10	N			4	25	JC	SM	PF
11	N			2	30	JC	QW	JC
12	N	2	2		50	JC	QL	JC
26	N	2			20	JC	JC	QL
27	N	1			15	SM	AR	JC
28	N	3			30	AR	SM	JC
133	N		1	1	80	QW	SM	PS
143	N		2		10	SM	SM	SM
306	N	2			85	SM	SM	SM
307	N	3	1		60	SM	SM	SM
308	N	2	1		65	SM	SM	SM
309	N	1			60	SM	SM	SM
310	N	2	2	1	70	SM	SM	SM
311	N	8	1		50	SM	SM	SM
312	N	5	1	1	65	SM	SM	SM
313	N	3	3	1	80	SM	SM	SM
314	N	2	5		30	SM	SM	SM
316	N	5	1		85	SM	SM	SM
317	N			1	75	SM	SM	SM
318	N	2	1		85	SM	SM	SM
319	N	3	2		60	SM	SM	SM
320	N	6	2		70	SM	SM	SM
321	N	4	3		75	SM	SM	SM
322	N	1	1		50	SM	SM	SM
323	N	2			60	SM	SM	SM
324	N		2		65	SM	SM	SM
330	N	1	2		45	QW	SM	QL
332	N	3			40	SM	SM	SM
333	N	3			40	SM	SM	SM
334	N	5	3		50	SM	SM	SM
335	N	1	1		40	SM	RP	SM
336	N	2			50	SM	SM	RD
338	N	5			65	SM	RP	SM
345	N	3		1	50	QW	SM	SM
352	N	6	2		50	SM	SM	SM
353	N	4	2		60	SM	SM	SM
354	N	3			70	SM	SM	SM
355	N	2			60	SM	RHACAL	SM

Plant #	Evidence	1" - 3"	3" - 5"	> 5"	% Living	1st Plant	2nd Plant	3rd Plant
356	N	2			85	SM	SM	SM
357	N	1			70	SM	SM	SM
358	N	4		1	75	SM	SM	SM
359	N	3	3		70	SM	SM	SM
360	N	2	1		60	SM	SM	SM
361	N	1	1		80	SM	SM	SM
362	N	5	2		75	SM	SM	SM
363	N	3	1		75	SM	SM	QW
364	N	3			60	SM	SM	SM
365	N	1	3		80	SM	SM	SM
366	N	2			50	SM	SM	SM
368	N	5	1		75	SM	SM	SM
369	N	1			50	QW	SM	RU
370	N		1		50	QW	SM	RU
371	N	1			40	QW	SM	RU
372	N	1	1		30	QW	SM	RU
373	N	1			50	QW	RU	SM
374	N	1	2	1	70	RP	RP	QW
375	N	1			50	QW	JC	QL
376	N		2		35	QW	RD	SM
377	N		2		25	QW	RU	SM
378	N		2		50	SM	QW	JC
379	Y	1	2		40	SM	RHACAL	QL
381	N	1			65	QW	QL	RU
382	N	1			30	QW	QL	JC
383	N	2			50	SM	SM	RD
384	N	6	3		60	SM	SM	RD
385	N	2			60	SM	SM	RD
386	N	6	2		55	SM	SM	SM
387	N	4		2	75	SM	SM	QL
398	N		1		50	QL	QW	SM
399	N		1		45	RHACAL	QW	SM
400	N		2		40	RHACAL	SM	QL
402	N	6	2		40	RU	BP	SASP
403	N	1			60	RU	RP	QW
404	N	1			70	RU	SM	QW
405	N	1			40	RU	SM	QW
406	N	2	1	1	50	RD	JC	SM
407	N	3	3	2	50	RD	JC	SM
408	N	2	1	1	50	RD	BP	SM
409	N	1	2	1	50	RD	BP	SM
410	N			1	50	RD	QL	QW
416	N	1	1		25	AA	QW	RD
417	N	5	2		65	SM	SM	SM
418	N	1	1		40	SM	SM	SM
419	N	2		1	50	SM	SM	SM
420	N			1	40	SM	SM	SM
421	N	2	1	1	50	SM	SM	SM
422	N	3	1	1	75	SM	SM	SM
423	N	1	4	1	65	SM	SM	SM

Plant #	Evidence	1" - 3"	3" - 5"	> 5"	% Living	1st Plant	2nd Plant	3rd Plant
483	N	1			50	SM	RD	BP
484	N	1	1		50	AA	QL	SM
485	N		1		40	RD	SM	BP
486	N		1		25	QW	SM	JC
487	N	1	2		25	SM	QW	JC
488	N	1			20	SM	QW	JC
489	N		1		35	QW	JC	SM
490	N	1	1		40	QW	JC	SM
491	N		1		25	QW	QL	RHACAL
492	N		1		50	SM	SM	SM
493	N	2			85	RD	QW	CO
518	N	3	1		65	SM	SM	SM
519	N	1	3		60	SM	SM	SM
520	N	5	2		65	SM	SM	SM
521	N	1	1		40	SM	SM	SM
600	N	4			85	SM	SM	SM
601	N	2			40	SM	SM	SM
602	N	5			75	SM	SM	SM
603	N	4	4	2	40	SM	SM	SM
604	N	3		1	60	SM	SM	SM
605	N	3	1		80	SM	QW	PS
606	N	2			15	SM	PS	QL
609	N	2			15	QW	QL	SM
610	N	2			20	SM	QW	PS
611	N	1			25	SM	QW	PS
612	N	1			25	SM	QW	PS
613	N	1			20	SM	QW	PS
614	N	1			35	SM	QW	PS
617	N	1			40	QW	QW	QL
800	N	3			70	SM	QL	QL
801	N	2			70	SM	SM	SM
802	N	1			75	SM	SM	SM
803	N	1			75	SM	SM	SM
804	N	2			80	SM	SM	SM
805	N	2			25	SM	SM	SM
806	N	1			75	SM	SM	SM
807	N	1			60	SM	SM	SM
808	N	2			80	SM	SM	SM
809	N	3			75	SM	SM	SM
810	N	1			70	SM	SM	SM
811	N	2			70	SM	SM	SM
812	N	5			65	SM	SM	SM
813	N	3			90	SM	SM	SM
814	N	2			80	SM	SM	SM
815	N	7			80	SM	SM	SM

### PHASE 1 SUMMARY

Total number of Elderberry plants	141
Total number of stems > 1" & < 3"	303
Total number of stems > 3" & < 5"	124
Total number of stems > 5"	30
Grand Total of stems > 1"	457
Number of plants with VELB evidence	1
Average number of stems per plant	3.2
Average percent living	54
Number of plants transplantable	141
Number of elderberry seedlings to plant	646
Number of native species seedling to plant	460
Acreage needed for planting	5.3

### Nearest Neighbor Plant Species

Symbol	Scientific Name	Common Name
AA	<i>Ailanthus altissima</i>	Tree-of-heaven
AR	<i>Alnus rhombifolia</i>	White alder
BP	<i>Baccharis pilularis</i>	Coyote bush
CO	<i>Cephalanthus occidentalis</i>	Common buttonbush
ERISP	<i>Eriodictyon</i> sp.	Yerba santa
FC	<i>Ficus carica</i>	Fig
JC	<i>Juglans californica</i>	California black walnut
JR	<i>Juglans regia</i>	English walnut
PF	<i>Populus fremontii</i>	Fremont's cottonwood
PRSP	<i>Prunus</i> sp.	Plum
PS	<i>Pinus sabiniana</i>	Foothill pine
QL	<i>Quercus wislizenii</i>	Interior live oak
QW	<i>Quercus lobata</i>	Valley oak
RC	<i>Rosa californica</i>	California rose
RD	<i>Rubus discolor</i>	Himalayan blackberry
RHACAL	<i>Rhamnus californica</i>	Coffeeberry
RP	<i>Robinia pseudoacacia</i>	Black locust
RU	<i>Rubus ursinus</i>	California blackberry
SASP	<i>Salix</i> sp.	Willow
SE	<i>Salix exigua</i>	Sandbar willow
SL	<i>Salix lasiolepis</i>	Arroyo willow
SM	<i>Sambucus mexicana</i>	Mexican elderberry
TD	<i>Toxicodendron diversilobum</i>	Poison oak

**Patterson Sand & Gravel  
Phase 2 Elderberry Plant List  
March 2000**

Plant #	Evidence	# Stems>1"	% Living	1st Plant	2nd Plant	3rd Plant	Transplant?
142	N	12	80	RD	PS	QL	Y
143	N	2	55	RC	RU	QL	Y
144	N	2	40	TD	RHACAL	QL	Y
178	N	2	70	RP	SM	RD	Y
179	N	5	70	RP	SM	RD	Y
180	N	6	75	RU	QL	RP	Y
181	N	1	65	RD	RU	RP	Y
182	N	3	85	QW	RHACAL	QL	Y
183	N	20	80	QL	QW	RHACAL	Y
184	N	7	90	RD	QL	QW	Y
185	N	10	65	QW	PS	QL	Y
186	N	10	60	RHACAL	QW	QL	Y
188	N	6	70	QW	QW	QL	Y
389	N	4	50	QW	RHACAL	QL	Y
502	N	2	95	RHACAL	QL	QW	Y
503	N	5	65	SM	RP	RD	Y
505	N	3	90	RU	RD	SM	Y
506	N	1	70	RD	RU	SM	Y
507	N	1	90	RD	RU	SM	Y
508	N	3	75	RD	SM	RU	Y
510	N	1	95	RU	RC	PRSP	Y
511	N	4	90	QW	RD	RHACAL	Y
512	N	8	85	RD	QL	RU	Y
513	N	3	85	QL	QW	RD	Y
514	N	14	75	RD	RHACAL	SM	Y
516	N	1	95	PS	RHACAL	QW	Y
517	N	1	80	QW	SM	PS	Y
518	N	4	75	SM	QW	QW	Y
524	N	2	60	RD	RU	RP	Y

**PHASE 2 SUMMARY**

Total number of Elderberry plants	29
Total number of stems > 1" & < 3"	99
Total number of stems > 3" & < 5"	41
Total number of stems > 5"	3
Grand Total of stems > 1"	143
Number of plants with VELB evidence	0
Average number of stems per plant	4.9
Average percent living	75
Number of plants transplantable	29
Number of elderberry seedlings to plant	190
Number of native species seedling to plant	143
Acreage needed for planting	1.4



**Patterson Sand & Gravel  
Phase 3 Elderberry Plant List  
March 2000**

Plant #	Evidence	# Stems>1"	% Living	1st Plant	2nd Plant	3rd Plant	Transplant?
140	N	8	30	RD	RHACAL	QL	Y
176	N	5	55	RC	RHACAL	QL	Y
189	N	4	65	PS	PF	QL	Y
190	N	5	50	QL	QW	RHACAL	Y
191	N	3	35	QL	RHACAL	QW	Y
325	N	3	60	QL	QW	PS	Y
494	N	1	30	QL	PS	QW	Y
501	N	4	85	QW	PS	QL	Y

**PHASE 3 SUMMARY**

Total number of Elderberry plants	8
Total number of stems > 1" & < 3"	23
Total number of stems > 3" & < 5"	9
Total number of stems > 5"	1
Grand Total of stems > 1"	33
Number of plants with VELB evidence	0
Average number of stems per plant	4.1
Average percent living	51.3
Number of plants transplantable	8
Number of elderberry seedlings to plant	44
Number of native species seedling to plant	33
Acreage needed for planting	0.3

**Patterson Sand & Gravel  
Phase 4 Elderberry Plant List  
March 2000**

Plant #	Evidence	# Stems>1"	% Living	1st Plant	2nd Plant	3rd Plant	Transplant?
141	N	2	30	RD	QW	QL	Y
165	N	3	35	RC	RU	SM	Y
166	N	4	40	RC	RU	SM	Y
167	N	1	35	RU	RC	RD	Y
168	N	3	60	QL	RP	PRSP	Y
169	N	5	65	RD	RU	QL	Y
170	N	4	50	QL	SM	RD	Y
171	N	5	65	RC	SM	QL	Y
172	N	2	60	QL	PRSP	RHACAL	Y
173	N	5	50	RP	JC	RD	Y
174	N	3	20	FC	QL	RD	Y
175	N	3	60	RD	RU	QL	Y
500	N	2	45	RD	SM	QL	Y

**PHASE 4 SUMMARY**

Total number of Elderberry plants	13
Total number of stems > 1" & < 3"	27
Total number of stems > 3" & < 5"	13
Total number of stems > 5"	2
Grand Total of stems > 1"	42
Number of plants with VELB evidence	0
Average number of stems per plant	3.2
Average percent living	47.3
Number of plants transplantable	13
Number of elderberry seedlings to plant	59
Number of native species seedlings to plant	42
Acreage needed for planting	0.4

**Patterson Sand & Gravel  
Phase 5 Elderberry Plant List  
March 2000**

Plant #	Evidence	# Stems>1"	% Living	1st Plant	2nd Plant	3rd Plant	Transplant?
65	Y	3	50	RD	JC	SL	Y
66	N	1	50	RD	SL	JC	Y
101	N	9	45	RD	SL	JR	Y
102	N	1	50	SM	QL	PF	Y
103	N	1	60	RC	SM	QL	Y
104	N	2	35	RD	RU	QL	Y
105	N	1	40	RU	SM	QW	Y
107	N	2	45	RU	QL	QW	Y
108	N	3	30	QL	RD	QW	Y
109	N	2	35	SM	RD	RU	Y
110	N	2	50	RD	QL	QW	Y
111	N	3	55	QW	QL	RHACAL	Y
112	N	2	55	QL	RD	PF	Y
113	N	1	35	QL	SM	RD	Y
118	N	2	50	QW	RHACAL	QL	Y
119	N	2	60	ERISP	QL	QW	Y
120	N	5	40	RHACAL	QL	QW	Y
125	N	5	60	RU	QL	PF	Y
126	N	1	55	SE	RD	QL	Y
127	N	2	40	RD	QL	SM	Y
128	N	1	30	RD	QL	QW	Y
130	N	4	40	SM	QL	QW	Y
326	N	2	50	RU	RHACAL	QL	Y
327	N	2	55	RU	QL	RHACAL	Y
328	N	2	45	RD	QW	QL	Y
446	N	1	50	SM	JC	JC	Y
447	Y	6	40	JC	QL	SM	Y
448	N	3	30	JC	QL	SM	Y
469	N	6	50	RD	SASP	PF	Y

**PHASE 5 SUMMARY**

Total number of Elderberry plants	29
Total number of stems > 1" & < 3"	48
Total number of stems > 3" & < 5"	26
Total number of stems > 5"	5
Grand Total of stems > 1"	79
Number of plants with VELB evidence	2
Average number of stems per plant	2.7
Average percent living	45.8
Number of plants transplantable	29
Number of elderberry seedlings to plant	115
Number of native species seedlings to plant	79
Acreage needed for planting	0.8

**Patterson Sand & Gravel  
Phase 6 Elderberry Plant List  
August 2000**

Plant #	Evidence	1" - 3"	3" - 5"	> 5"	% Living	1st Plant	2nd Plant	3rd Plant
653	N	2			20	SL	SL	PF
654	N	1	1		45	SL	RD	SL
661	N	1			35	QL	QL	SM
662	N	1			50	QL	SM	QL
663	N	3			50	QL	SM	QL
664	N	2			30	QL	SM	QW
665	N	1			45	QW	QW	SM
666	N	1			20	QW	QW	SM

**PHASE 6 SUMMARY**

Total number of Elderberry plants	8
Total number of stems > 1" & < 3"	12
Total number of stems > 3" & < 5"	1
Total number of stems > 5"	0
Grand Total of stems > 1"	13
Number of plants with VELB evidence	0
Average number of stems per plant	1.6
Average percent living	37
Number of plants transplantable	8
Number of elderberry seedlings to plant	14
Number of native species seedlings to plant	13
Acreage needed for planting	0.2

### Nearest Neighbor Plant Species

Symbol	Scientific Name	Common Name
AA	<i>Ailanthus altissima</i>	Tree-of-heaven
AR	<i>Alnus rhombifolia</i>	White alder
BP	<i>Baccharis pilularis</i>	Coyote bush
CO	<i>Cephalanthus occidentalis</i>	Common buttonbush
ERISP	<i>Eriodictyon</i> sp.	Yerba santa
FC	<i>Ficus carica</i>	Fig
JC	<i>Juglans californica</i>	California black walnut
JR	<i>Juglans regia</i>	English walnut
PF	<i>Populus fremontii</i>	Fremont's cottonwood
PRSP	<i>Prunus</i> sp.	Plum
PS	<i>Pinus sabiniana</i>	Foothill pine
QL	<i>Quercus wislizenii</i>	Interior live oak
QW	<i>Quercus lobata</i>	Valley oak
RC	<i>Rosa californica</i>	California rose
RD	<i>Rubus discolor</i>	Himalayan blackberry
RHACAL	<i>Rhamnus californica</i>	Coffeeberry
RP	<i>Robinia pseudoacacia</i>	Black locust
RU	<i>Rubus ursinus</i>	California blackberry
SASP	<i>Salix</i> sp.	Willow
SE	<i>Salix exigua</i>	Sandbar willow
SL	<i>Salix lasiolepis</i>	Arroyo willow
SM	<i>Sambucus mexicana</i>	Mexican elderberry
TD	<i>Toxicodendron diversilobum</i>	Poison oak

## APPENDIX B



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, California 95825

### Conservation Guidelines for the Valley Elderberry Longhorn Beetle

9 July 1999

The following guidelines have been issued by the U.S. Fish and Wildlife Service (Service) to assist Federal agencies and non-federal project applicants needing incidental take authorization through a section 7 consultation or a section 10(a)(1)(B) permit in developing measures to avoid and minimize adverse effects on the valley elderberry longhorn beetle. The Service will revise these guidelines as needed in the future. The most recently issued version of these guidelines should be used in developing all projects and habitat restoration plans. The survey and monitoring procedures described below are designed to avoid any adverse effects to the valley elderberry longhorn beetle. Thus a recovery permit is not needed to survey for the beetle or its habitat or to monitor conservation areas. If you are interested in a recovery permit for research purposes please call the Service's Regional Office at (503) 231-2063.

#### BACKGROUND INFORMATION

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), was listed as a threatened species on August 8, 1980 (*Federal Register* 45: 52803-52807). This animal is fully protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The valley elderberry longhorn beetle (beetle) is completely dependent on its host plant, elderberry (*Sambucus* species), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Use of the elderberry by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal stage. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of an elderberry plant. Adult emergence is from late March through June, about the same time the elderberry produces flowers. The adult stage is short-lived. Further information on the life history, ecology, behavior, and distribution of the beetle can be found in a report by Barr (1991) and the recovery plan for the beetle (USFWS 1984).

#### SURVEYS

Proposed project sites within the range of the valley elderberry longhorn beetle should be surveyed for the presence of the beetle and its elderberry host plant by a qualified biologist. The beetle's range extends throughout California's Central Valley and associated foothills from about the 3,000-foot elevation contour on the east and the watershed of the Central Valley on the west (Figure 1). All or portions of 31 counties are included: Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Madera, Mariposa, Merced, Napa, Nevada, Placer, Sacramento, San Benito, San Joaquin, San Luis Obispo, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba.

If elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level occur on or adjacent to the proposed project site, or are otherwise located where they may be directly or indirectly affected by the proposed action, minimization measures which include planting replacement habitat (conservation planting) are required (Table 1).

All elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that occur on or adjacent to a proposed project site must be thoroughly searched for beetle exit holes (external evidence of beetle presence). In addition, all elderberry stems one inch or greater in diameter at ground level must be tallied by diameter size class (Table 1). As outlined in Table 1, the numbers of elderberry seedlings/cuttings and associated riparian native trees/shrubs to be planted as replacement habitat are determined by stem size class of affected elderberry shrubs, presence or absence of exit holes, and whether a proposed project lies in a riparian or non-riparian area.

Elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of their small size and/or immaturity. Therefore, no minimization measures are required for removal of elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level with no exit holes. Surveys are valid for a period of two years.

#### **AVOID AND PROTECT HABITAT WHENEVER POSSIBLE**

Project sites that do not contain beetle habitat are preferred. If suitable habitat for the beetle occurs on the project site, or within close proximity where beetles will be affected by the project, these areas must be designated as avoidance areas and must be protected from disturbance during the construction and operation of the project. When possible, projects should be designed such that avoidance areas are connected with adjacent habitat to prevent fragmentation and isolation of beetle populations. Any beetle habitat that cannot be avoided as described below should be considered impacted and appropriate minimization measures should be proposed as described below.

##### Avoidance: Establishment and Maintenance of a Buffer Zone

Complete avoidance (i.e., no adverse effects) may be assumed when a 100-foot (or wider) buffer is established and maintained around elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level. Firebreaks may not be included in the buffer zone. In buffer areas construction-related disturbance should be minimized, and any damaged area should be promptly restored following construction. The Service must be consulted before any disturbances within the buffer area are considered. In addition, the Service must be provided with a map identifying the avoidance area and written details describing avoidance measures.

##### Protective Measures

1. Fence and flag all areas to be avoided during construction activities. In areas where encroachment on the 100-foot buffer has been approved by the Service, provide a minimum setback of at least 20 feet from the dripline of each elderberry plant.
2. Brief contractors on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements.
3. Erect signs every 50 feet along the edge of the avoidance area with the following information:  
"This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must

not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

4. Instruct work crews about the status of the beetle and the need to protect its elderberry host plant.

#### Restoration and Maintenance

1. Restore any damage done to the buffer area (area within 100 feet of elderberry plants) during construction. Provide erosion control and re-vegetate with appropriate native plants.
2. Buffer areas must continue to be protected after construction from adverse effects of the project. Measures such as fencing, signs, weeding, and trash removal are usually appropriate.
3. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant should be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.
4. The applicant must provide a written description of how the buffer areas are to be restored, protected, and maintained after construction is completed.
5. Mowing of grasses/ground cover may occur from July through April to reduce fire hazard. No mowing should occur within five (5) feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment).

#### **TRANSPLANT ELDERBERRY PLANTS THAT CANNOT BE AVOIDED**

Elderberry plants must be transplanted if they can not be avoided by the proposed project. All elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level must be transplanted to a conservation area (see below). At the Service's discretion, a plant that is unlikely to survive transplantation because of poor condition or location, or a plant that would be extremely difficult to move because of access problems, may be exempted from transplantation. In cases where transplantation is not possible the minimization ratios in Table 1 may be increased to offset the additional habitat loss.

Trimming of elderberry plants (e.g., pruning along roadways, bike paths, or trails) with one or more stems 1.0 inch or greater in diameter at ground level, may result in take of beetles. Therefore, trimming is subject to appropriate minimization measures as outlined in Table 1.

1. Monitor. A qualified biologist (monitor) must be on-site for the duration of the transplanting of the elderberry plants to insure that no unauthorized take of the valley elderberry longhorn beetle occurs. If unauthorized take occurs, the monitor must have the authority to stop work until corrective measures have been completed. The monitor must immediately report any unauthorized take of the beetle or its habitat to the Service and to the California Department of Fish and Game.

2. Timing. Transplant elderberry plants when the plants are dormant, approximately November through the first two weeks in February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.
3. Transplanting Procedure.
  - a. Cut the plant back 3 to 6 feet from the ground or to 50 percent of its height (whichever is taller) by removing branches and stems above this height. The trunk and all stems measuring 1.0 inch or greater in diameter at ground level should be replanted. Any leaves remaining on the plant should be removed.
  - b. Excavate a hole of adequate size to receive the transplant.
  - c. Excavate the plant using a Vemeer spade, backhoe, front end loader, or other suitable equipment, taking as much of the root ball as possible, and replant immediately at the conservation area. Move the plant only by the root ball. If the plant is to be moved and transplanted off site, secure the root ball with wire and wrap it with burlap. Dampen the burlap with water, as necessary, to keep the root ball wet. Do not let the roots dry out. Care should be taken to ensure that the soil is not dislodged from around the roots of the transplant. If the site receiving the transplant does not have adequate soil moisture, pre-wet the soil a day or two before transplantation.
  - d. The planting area must be at least 1,800 square feet for each elderberry transplant. The root ball should be planted so that its top is level with the existing ground. Compact the soil sufficiently so that settlement does not occur. As many as five (5) additional elderberry plantings (cuttings or seedlings) and up to five (5) associated native species plantings (see below) may also be planted within the 1,800 square foot area with the transplant. The transplant and each new planting should have its own watering basin measuring at least three (3) feet in diameter. Watering basins should have a continuous berm measuring approximately eight (8) inches wide at the base and six (6) inches high.
  - e. Saturate the soil with water. Do not use fertilizers or other supplements or paint the tips of stems with pruning substances, as the effects of these compounds on the beetle are unknown.
  - f. Monitor to ascertain if additional watering is necessary. If the soil is sandy and well-drained, plants may need to be watered weekly or twice monthly. If the soil is clayey and poorly-drained, it may not be necessary to water after the initial saturation. However, most transplants require watering through the first summer. A drip watering system and timer is ideal. However, in situations where this is not possible, a water truck or other apparatus may be used.

#### PLANT ADDITIONAL SEEDLINGS OR CUTTINGS

Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) must be replaced, in the conservation area, with elderberry seedlings or cuttings at a ratio ranging from 1:1 to 8:1 (new plantings to affected stems). Minimization

ratios are listed and explained in Table 1. Stock of either seedlings or cuttings should be obtained from local sources. Cuttings may be obtained from the plants to be transplanted if the project site is in the vicinity of the conservation area. If the Service determines that the elderberry plants on the proposed project site are unsuitable candidates for transplanting, the Service may allow the applicant to plant seedlings or cuttings at higher than the stated ratios in Table 1 for each elderberry plant that cannot be transplanted.

### PLANT ASSOCIATED NATIVE SPECIES

Studies have found that the beetle is more abundant in dense native plant communities with a mature overstory and a mixed understory. Therefore, a mix of native plants associated with the elderberry plants at the project site or similar sites will be planted at ratios ranging from 1:1 to 2:1 [native tree/plant species to each elderberry seedling or cutting (see Table 1)]. These native plantings must be monitored with the same survival criteria used for the elderberry seedlings (see below). Stock of saplings, cuttings, and seedlings should be obtained from local sources. If the parent stock is obtained from a distance greater than one mile from the conservation area, approval by the Service of the native plant donor sites must be obtained prior to initiation of the revegetation work. Planting or seeding the conservation area with native herbaceous species is encouraged. Establishing native grasses and forbs may discourage unwanted non-native species from becoming established or persisting at the conservation area. Only stock from local sources should be used.

#### Examples

##### Example 1

The project will adversely affect beetle habitat on a vacant lot on the land side of a river levee. This levee now separates beetle habitat on the vacant lot from extant Great Valley Mixed Riparian Forest (Holland 1986) adjacent to the river. However, it is clear that the beetle habitat located on the vacant lot was part of a more extensive mixed riparian forest ecosystem extending farther from the river's edge prior to agricultural development and levee construction. Therefore, the beetle habitat on site is considered riparian. A total of two elderberry plants with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The two plants have a total of 15 stems measuring over 1.0 inch. No exit holes were found on either plant. Ten of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are greater than 5.0 inches in diameter. The conservation area is suited for riparian forest habitat. Associated natives adjacent to the conservation area are box elder (*Acer negundo californica*), walnut (*Juglans californica* var. *hindsii*), sycamore (*Platanus racemosa*), cottonwood (*Populus fremontii*), willow (*Salix gooddingii* and *S. laevigata*), white alder (*Alnus rhombifolia*), ash (*Fraxinus latifolia*), button willow (*Cephalanthus occidentalis*), and wild grape (*Vitis californica*).

Minimization (based on ratios in Table 1):

- Transplant the two elderberry plants that will be affected to the conservation area.
- Plant 40 elderberry rooted cuttings (10 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)
- Plant 40 associated native species (ratio of associated natives to elderberry plantings is 1:1 in areas with no exit holes):
  - 5 saplings each of box elder, sycamore, and cottonwood

5 willow seedlings  
5 white alder seedlings  
5 saplings each of walnut and ash  
3 California button willow  
2 wild grape vines

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Total: 40 associated native species

- Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 80 plants must be planted (40 elderberries and 40 associated natives), a total of 0.33 acre (14,400 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

#### Example 2

The project will adversely affect beetle habitat in Blue Oak Woodland (Holland 1986). One elderberry plant with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The plant has a total of 10 stems measuring over 1.0 inch. Exit holes were found on the plant. Five of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are between 3.0 and 5.0 inches in diameter. The conservation area is suited for elderberry savanna (non-riparian habitat). Associated natives adjacent to the conservation area are willow (*Salix* species), blue oak (*Quercus douglasii*), interior live oak (*Q. wislizenii*), sycamore, poison oak (*Toxicodendron diversilobum*), and wild grape.

Minimization (based on ratios in Table 1):

- Transplant the one elderberry plant that will be affected to the conservation area.
- Plant 30 elderberry seedlings (5 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)
- Plant 60 associated native species (ratio of associated natives to elderberry plantings is 2:1 in areas with exit holes):
  - 20 saplings of blue oak, 20 saplings of sycamore, and 20 saplings of willow, and seed and plant with a mixture of native grasses and forbs
- Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 90 plants must be planted (30 elderberries and 60 associated natives), a total of 0.37 acre (16,200 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

#### **CONSERVATION AREA—PROVIDE HABITAT FOR THE BEETLE IN PERPETUITY**

The conservation area is distinct from the avoidance area (though the two may adjoin), and serves to receive and protect the transplanted elderberry plants and the elderberry and other native plantings. The Service may accept proposals for off-site conservation areas where appropriate.

1. Size. The conservation area must provide at least 1,800 square feet for each transplanted elderberry plant. As many as 10 conservation plantings (i.e., elderberry cuttings or seedlings and/or associated native plants) may be planted within the 1800 square foot area with each transplanted elderberry. An additional 1,800 square feet shall be provided for every additional 10 conservation plants. Each planting should have its own watering basin measuring approximately three feet in diameter. Watering basins should be constructed with a continuous berm measuring approximately eight inches wide at the base and six inches high.

The planting density specified above is primarily for riparian forest habitats or other habitats with naturally dense cover. If the conservation area is an open habitat (i.e., elderberry savanna, oak woodland) more area may be needed for the required plantings. Contact the Service for assistance if the above planting recommendations are not appropriate for the proposed conservation area.

No area to be maintained as a firebreak may be counted as conservation area. Like the avoidance area, the conservation area should connect with adjacent habitat wherever possible, to prevent isolation of beetle populations.

Depending on adjacent land use, a buffer area may also be needed between the conservation area and the adjacent lands. For example, herbicides and pesticides are often used on orchards or vineyards. These chemicals may drift or runoff onto the conservation area if an adequate buffer area is not provided.

2. Long-Term Protection. The conservation area must be protected in perpetuity as habitat for the valley elderberry longhorn beetle. A conservation easement or deed restrictions to protect the conservation area must be arranged. Conservation areas may be transferred to a resource agency or appropriate private organization for long-term management. The Service must be provided with a map and written details identifying the conservation area; and the applicant must receive approval from the Service that the conservation area is acceptable prior to initiating the conservation program. A true, recorded copy of the deed transfer, conservation easement, or deed restrictions protecting the conservation area in perpetuity must be provided to the Service before project implementation.

Adequate funds must be provided to ensure that the conservation area is managed in perpetuity. The applicant must dedicate an endowment fund for this purpose, and designate the party or entity that will be responsible for long-term management of the conservation area. The Service must be provided with written documentation that funding and management of the conservation area (items 3-8 above) will be provided in perpetuity.

3. Weed Control. Weeds and other plants that are not native to the conservation area must be removed at least once a year, or at the discretion of the Service and the California Department of Fish and Game. Mechanical means should be used; herbicides are prohibited unless approved by the Service.
4. Pesticide and Toxicant Control. Measures must be taken to insure that no pesticides, herbicides, fertilizers, or other chemical agents enter the conservation area. No spraying of these agents must be done within one 100 feet of the area, or if they have the potential to drift, flow, or be washed into the area in the opinion of biologists or law enforcement personnel from the Service or the California Department of Fish and Game.

5. Litter Control. No dumping of trash or other material may occur within the conservation area. Any trash or other foreign material found deposited within the conservation area must be removed within 10 working days of discovery.
6. Fencing. Permanent fencing must be placed completely around the conservation area to prevent unauthorized entry by off-road vehicles, equestrians, and other parties that might damage or destroy the habitat of the beetle, unless approved by the Service. The applicant must receive written approval from the Service that the fencing is acceptable prior to initiation of the conservation program. The fence must be maintained in perpetuity, and must be repaired/replaced within 10 working days if it is found to be damaged. Some conservation areas may be made available to the public for appropriate recreational and educational opportunities with written approval from the Service. In these cases appropriate fencing and signs informing the public of the beetle's threatened status and its natural history and ecology should be used and maintained in perpetuity.
7. Signs. A minimum of two prominent signs must be placed and maintained in perpetuity at the conservation area, unless otherwise approved by the Service. The signs should note that the site is habitat of the federally threatened valley elderberry longhorn beetle and, if appropriate, include information on the beetle's natural history and ecology. The signs must be approved by the Service. The signs must be repaired or replaced within 10 working days if they are found to be damaged or destroyed.

## MONITORING

The population of valley elderberry longhorn beetles, the general condition of the conservation area, and the condition of the elderberry and associated native plantings in the conservation area must be monitored over a period of either ten (10) consecutive years or for seven (7) years over a 15-year period. The applicant may elect either 10 years of monitoring, with surveys and reports every year; or 15 years of monitoring, with surveys and reports on years 1, 2, 3, 5, 7, 10, and 15. The conservation plan provided by the applicant must state which monitoring schedule will be followed. No change in monitoring schedule will be accepted after the project is initiated. If conservation planting is done in stages (i.e., not all planting is implemented in the same time period), each stage of conservation planting will have a different start date for the required monitoring time.

Surveys. In any survey year, a minimum of two site visits between February 14 and June 30 of each year must be made by a qualified biologist. Surveys must include:

1. A population census of the adult beetles, including the number of beetles observed, their condition, behavior, and their precise locations. Visual counts must be used; mark-recapture or other methods involving handling or harassment must not be used.
2. A census of beetle exit holes in elderberry stems, noting their precise locations and estimated ages.
3. An evaluation of the elderberry plants and associated native plants on the site, and on the conservation area, if disjunct, including the number of plants, their size and condition.



4. An evaluation of the adequacy of the fencing, signs, and weed control efforts in the avoidance and conservation areas.
5. A general assessment of the habitat, including any real or potential threats to the beetle and its host plants, such as erosion, fire, excessive grazing, off-road vehicle use, vandalism, excessive weed growth, etc.

The materials and methods to be used in the monitoring studies must be reviewed and approved by the Service. All appropriate Federal permits must be obtained prior to initiating the field studies.

Reports. A written report, presenting and analyzing the data from the project monitoring, must be prepared by a qualified biologist in each of the years in which a monitoring survey is required. Copies of the report must be submitted by December 31 of the same year to the Service (Chief of Endangered Species, Sacramento Fish and Wildlife Office), and the Department of Fish and Game (Supervisor, Environmental Services, Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814; and Staff Zoologist, California Natural Diversity Data Base, Department of Fish and Game, 1220 S Street, Sacramento, California 95814). The report must explicitly address the status and progress of the transplanted and planted elderberry and associated native plants and trees, as well as any failings of the conservation plan and the steps taken to correct them. Any observations of beetles or fresh exit holes must be noted. Copies of original field notes, raw data, and photographs of the conservation area must be included with the report. A vicinity map of the site and maps showing where the individual adult beetles and exit holes were observed must be included. For the elderberry and associated native plants, the survival rate, condition, and size of the plants must be analyzed. Real and likely future threats must be addressed along with suggested remedies and preventative measures (e.g. limiting public access, more frequent removal of invasive non-native vegetation, etc.).

A copy of each monitoring report, along with the original field notes, photographs, correspondence, and all other pertinent material, should be deposited at the California Academy of Sciences (Librarian, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118) by December 31 of the year that monitoring is done and the report is prepared. The Service's Sacramento Fish and Wildlife Office should be provided with a copy of the receipt from the Academy library acknowledging receipt of the material, or the library catalog number assigned to it.

Access. Biologists and law enforcement personnel from the California Department of Fish and Game and the Service must be given complete access to the project site to monitor transplanting activities. Personnel from both these agencies must be given complete access to the project and the conservation area to monitor the beetle and its habitat in perpetuity.

#### SUCCESS CRITERIA

A minimum survival rate of at least 60 percent of the elderberry plants and 60 percent of the associated native plants must be maintained throughout the monitoring period. Within one year of discovery that survival has dropped below 60 percent, the applicant must replace failed plantings to bring survival above this level. The Service will make any determination as to the applicant's replacement responsibilities arising from circumstances beyond its control, such as plants damaged or killed as a result of severe flooding or vandalism.

### SERVICE CONTACT

These guidelines were prepared by the Endangered Species Division of the Service's Sacramento Fish and Wildlife Office. If you have questions regarding these guidelines or to request a copy of the most recent guidelines, telephone (916) 414-6600 after August 5, 1999, or write to:

U.S. Fish and Wildlife Service  
Ecological Services  
2800 Cottage Way, W-2605  
Sacramento, CA 95825

#### LITERATURE CITED

- Barr, C. B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle *Desmocerus californicus dimorphus*. U.S. Fish and Wildlife Service; Sacramento, California.
- Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Unpublished Report. State of California, The Resources Agency, Department of Fish and Game, Natural Heritage Division, Sacramento, California.
- USFWS. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Federal Register 45:52803-52807.
- USFWS. 1984. Recovery plan for the valley elderberry longhorn beetle. U.S. Fish and Wildlife Service, Endangered Species Program; Portland, Oregon.



**Figure 1: Range of the Valley Elderberry Longhorn Beetle**

**Table 1: Minimization ratios based on location (riparian vs. non-riparian), stem diameter of affected elderberry plants at ground level, and presence or absence of exit holes.**

Location	Stems (maximum diameter at ground level)	Exit Holes on Shrub Y/N (quantify) <sup>1</sup>	Elderberry Seedling Ratio <sup>2</sup>	Associated Native Plant Ratio <sup>3</sup>
non-riparian	stems $\geq 1"$ & $\leq 3"$	No:	1:1	1:1
		Yes:	2:1	2:1
non-riparian	stems $> 3"$ & $< 5"$	No:	2:1	1:1
		Yes:	4:1	2:1
non-riparian	stems $\geq 5"$	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems $\geq 1"$ & $\leq 3"$	No:	2:1	1:1
		Yes:	4:1	2:1
riparian	stems $> 3"$ & $< 5"$	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems $\geq 5"$	No:	4:1	1:1
		Yes:	8:1	2:1

<sup>1</sup> All stems measuring one inch or greater in diameter at ground level on a single shrub are considered occupied when exit holes are present anywhere on the shrub.

<sup>2</sup> Ratios in the *Elderberry Seedling Ratio* column correspond to the number of cuttings or seedlings to be planted per elderberry stem (one inch or greater in diameter at ground level) affected by a project.

<sup>3</sup> Ratios in the *Associated Native Plant Ratio* column correspond to the number of associated native species to be planted per elderberry (seedling or cutting) planted.



**BIOLOGICAL RESOURCES ASSESSMENT  
FOR THE  
PATTERSON SAND & GRAVEL  
DAMON ORCHARD EXPANSION AREA**

**Placer and Yuba Counties, California**

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**Revised November 2000**

**BIOLOGICAL RESOURCES REPORT  
FOR THE  
PATTERSON SAND & GRAVEL  
DAMON ORCHARD EXPANSION AREA**

**Placer and Yuba Counties, California**

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**BIOLOGICAL RESOURCES ASSESSMENT  
FOR THE  
PATTERSON SAND & GRAVEL  
DAMON ORCHARD EXPANSION AREA  
  
PLACER AND YUBA COUNTIES, CALIFORNIA**

## **INTRODUCTION**

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A biological and wetlands resources investigation has been conducted for a ±467 acre portion of the Patterson Sand and Gravel/Damon Estate Proposed Expansion project site. This investigation addresses the expansion area with regard to habitats present and the potential for special-status species occurrence. The existing operation (east of the section line and south of the county line) is not treated in this document. However, elderberry plants in the existing operation are identified and presented under separate cover.

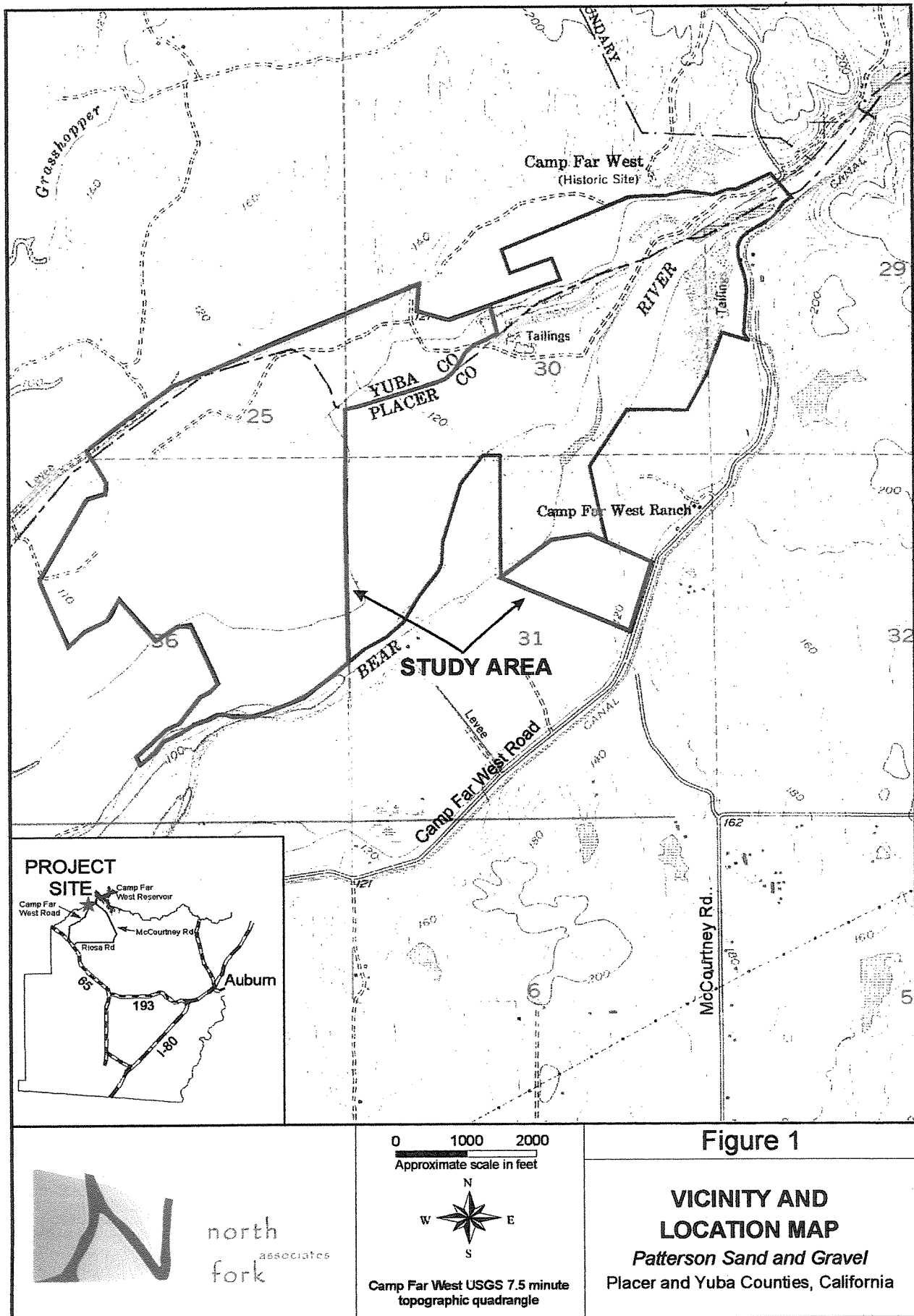
The project site is two parcels separated by a walnut orchard. It is located in northwestern Placer County and southern Yuba County. The site is approximately 2.5 miles northeast of Sheridan in sections 25, 30, 31, and 36, Township 13 & 14N, Range 5 & 6E of the Camp Far West 7.5 minute topographic quadrangle (Figure 1). Coordinates to the approximate center of the project area are: 39° 01' 46" N and 121° 21' 08" W.

## **ENVIRONMENTAL SETTING**

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The project site is located north of and adjacent to the Bear River, in its historic floodplain. The entire area contains deep, coarse soils, primarily sand and larger grained material. In the nineteenth century, placer mining in the Sierra Nevada Mountains washed huge amounts of sediment down the Bear River drainage, leaving deep deposits in the project area. Since Camp Far West dam was constructed in 1962, periodic very high flood flows were reduced which in turn effectively squeezed the river into a narrower corridor. Highest release out of Camp Far West during the January 1997 floods was approximately 34,000 cubic feet per second. These flows were relatively contained and the riverbed maintained its original location. The project area is located on the adjacent high bench next to the river. The river elevation is approximately 91 feet above sea level and the relatively flat adjoining bench is approximately 113 feet above sea level—a twenty-two foot difference. The material in this twenty-two feet is primarily sand and gravel.

The deep dry soils of the floodplain support annual grassland and oak woodland communities. Valley oak is the most common tree species. Shrubs are also abundant in many areas.



## Biological Resource Assessment Objectives

The biological resources assessment of the Patterson Sand & Gravel / Damon Orchard Expansion Area project site was conducted to:

- Identify and describe the biological communities present on the project site
- Record plant and animal species observed on the project site
- Evaluate and identify sensitive resources and special status plant and animal species observed or potentially occurring within the project area

## METHODOLOGY

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### Literature Review

The following publications were among those reviewed to provide information on life history, habitat requirements, distribution, and conservation status of regionally occurring plant and animal species—*The Inventory of Rare and Endangered Vascular Plants of California* (California Native Plant Society 1994), *The Jepson Manual, Higher Plants of California* (Hickman 1993), *California Birds: Their Status and Distribution* (Small 1994), *California's Wildlife, Volumes I-III* (Zeiner *et al.* 1988, 1990a, 1990b) *Amphibian and Reptile Species of Special Concern in California* (Jennings and Hayes 1994), *Lives of North American Birds* (Kaufman 1996), *A Field Guide to Western Reptiles and Amphibians* (Stebbins 1985), *A Field Guide to the Mammals* (Burt and Grossenheider 1976) and *A Field Guide to Western Birds* (Peterson 1990).

### Natural Diversity Data Base Report

The California Department of Fish and Game's (CDFG) Natural Diversity Data Base (NDDB) (CDFG 1999) contains records of reported occurrences of rare native species and unique natural communities. Legal status, observation dates, locations, habitats, ecological descriptions, and population data are available through the database. The NDDB was recently queried for any additional information that may have been made available since the original report. The Camp Far West, California 7.5 minute USGS topographic quadrangle and the three closest adjoining topographic quadrangles (approximately 220 square miles) were searched.

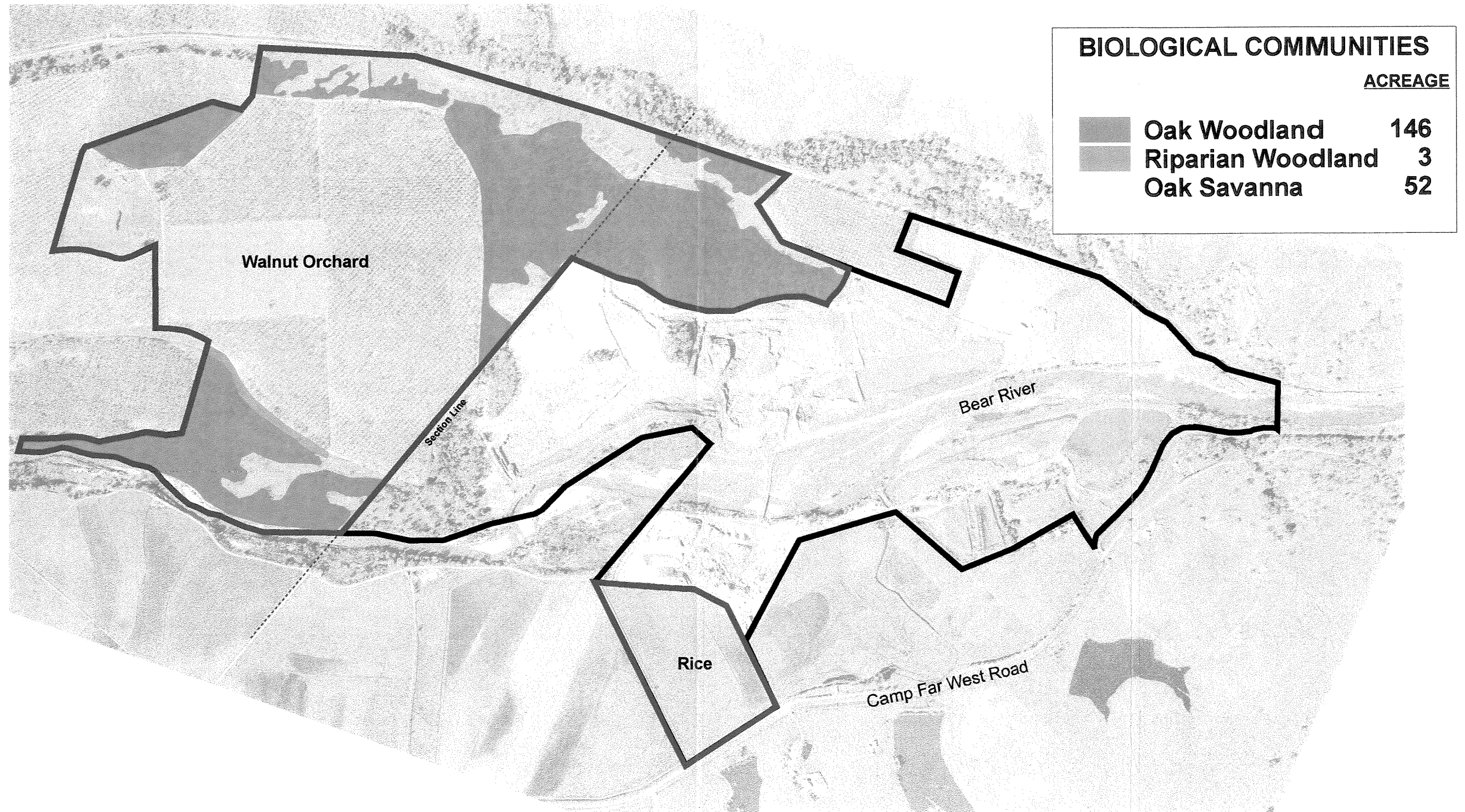
### Field Assessment

The original field surveys were conducted by Jeff Glazner during five field days in August and September 1996. Field surveys for this revised document were made on numerous occasions from 1997 through July 2000, both by vehicle and on foot. On-site habitats were evaluated for their potential to support regionally occurring special status plant and animal species.

## BIOLOGICAL COMMUNITIES

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The biological communities described in this section include a characterization of the plant communities and associated wildlife habitats (Figure 2).



0 1000  
Approximate Scale in Feet



Photograph Date: 1-27-2000 by Towill, Inc.

Figure 2

**HABITAT MAP**  
PATTERSON SAND AND GRAVEL  
Placer and Yuba Counties, California

Plant communities (vegetation) are mapped in the field and when possible are described according to the California Department of Fish and Game's NDDDB list of California terrestrial natural communities (CDFG 1999) and the California Native Plant Society's *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). The most recent NDDDB list is based on the classification system in the manual and is compatible with previous NDDDB natural communities lists. Plant species identifications and botanical nomenclature follow the *Jepson Manual* (Hickman 1993).

Wildlife is described in the framework of the CDFG Wildlife Habitat Relationship System (WHR) (Mayer and Laudenslayer 1988). The WHR contains information on the relationship between wildlife species and their habitats. The WHR provides a cross-reference between vegetation classification systems and wildlife habitat. This methodology allows one to map plant communities and compare them to the descriptions in the WHR and to put together a predictive list of keystone species. This proves valuable in identifying possible special status species that share similar ecological niches and distribution.

Wildlife habitat descriptions are often closely tied to observations of birds because of their conspicuous nature. Reptiles, amphibians, and small mammals are, because of their secretive nature, rarely observed during surveys and their presence is inferred through both indirect signs (e.g. tracks, scat, etc.) and an understanding of their behavioral ecology. Avian nomenclature follows the *A.O.U. Check-list of North American Birds* (1998).

Natural biological communities/habitat types found in the project study area include (Table 1):

**Table 1. Acreage of Natural Habitat Types in the Study Area**

Community/Habitat Type	Acreage Present
Oak Savanna	52
Oak Woodland	146
Riparian Woodland	3
<b>Total</b>	<b>201</b>

## **Oak Savanna**

The oak savanna is typified by the dominance of non-native grass species, and many non-native non-grass species. Woody vegetation is lacking to sparse. Trees and shrubs are scattered throughout the grassland but do not occur in large enough numbers to be considered a woodland.

Vegetation. Depending on the level of disturbance, degree of shade, moisture level, and other environmental factors, several species are considered dominants in this plant community. Yellow star thistle, wild oat, ripgut brome, rose clover, tarweed, telegraph weed, hedge parsley, and filaree are among the most common herbaceous species in the savanna areas. Scattered oak, pine, and shrubs dot the savanna area.

A few peculiar plant associations are worth noting, occurring primarily in the savanna areas. Deer grass, a locally common bunchgrass, is species is typically associated with wetland fringes. Here it grows in dry sandy conditions as a local dominant with yellow star thistle, ripgut brome and rose clover, all obligate upland species.

Wildlife. Non-native annual grassland habitat provides habitat for ground-nesting bird species, including western meadowlark, horned lark, lark sparrow and mourning dove. Many species may use the grasslands and adjacent wooded areas while foraging including wild turkey, California quail, rufous-sided towhee, California towhee, western kingbird, and rufous-crowned sparrow. Raptors, such as red-tailed hawks, red-shouldered hawk, white-tailed kites, American kestrel, great horned owl, and northern harriers forage the grassland for small mammals. Large mammals including fox and coyote forage on small mammals and reptiles. Fossorial mammals such as ground squirrels, pocket gophers and moles utilize the grassland as their primary habitat, as do black-tailed jackrabbit, voles, and deer mice. Reptiles which may occur within the project site include western fence lizard, southern alligator lizard, western skink, common garter snake, gopher snake, and western rattlesnake.

### **Oak Woodland**

Oak woodland is defined here by the dominance of native oak species growing in large enough numbers to effectively change the character of the grassland by the ability to support an additional set of plant and animal species. Oak woodland is the most abundant natural habitat type.

Vegetation. Most of the oak woodland areas are dominated by valley oak. However, the eastern portion of the northern parcel supports numerous interior live oak, and portions of the southern parcel support groves of California black walnut, cottonwood, and tree of heaven. The oak woodland area also supports an abundance of shrub species including poison oak, Himalayan and California blackberry, California buckeye, white leaf manzanita, elderberry, buck brush, coyote bush, and coffeeberry. Herbaceous species vary widely but are most widely represented by rose clover, hedge parsley, dog tail grass and yellow star thistle.

A very large ponderosa pine is located in the northern area in an area where whiteleaf manzanita, and buck brush are common. All are common foothill and low mountain species and are not typically found at this low elevation. The obvious explanation for their occurrence here is they were deposited along with the sediment washed out of the Sierra Nevada mountains during the dredger mining days. The high seed content and the native soils for these species allowed them to colonize the area. As one would expect, most of these species are on the decline and will probably die out with more time. The one exception to this is the healthy population of whiteleaf manzanita on site. Individuals of this species will probably hang on indefinitely.

Wildlife. Several additional wildlife species utilize oak woodlands than the adjacent annual grassland. Bird species may include several raptors (hawks/owls), Nuttall's woodpecker, northern flicker, plain titmouse, bushtit, and white-breasted nuthatch and great horned owl. The shrub-layer may be utilized by scrub jay, Bewick's wren, ruby-crowned kinglet, and



wren. The understory grasses and forbs strata include California quail, rufous-sided towhee, California towhee, white-crowned sparrow, and wild turkey.

Mammals typical of the wooded habitat within the project site include mule deer, California ground squirrel, Audubon's cottontail, and western gray squirrel. Many reptiles of open habitats may occur in the wooded areas including western fence lizard, southern alligator lizard, western skink, Gilbert skink, common garter snake, gopher snake, and western rattlesnake.

## **Riparian Woodland**

The term "riparian woodland" is defined here as any area wet enough to support trees and shrubs adapted for growth in moist or saturated conditions. This typically occurs along stream corridors and in non-stream low-lying areas where groundwater is nearer to the surface for extended periods. Riparian woodlands can be wetlands or uplands, and often straddle the line at any given location. One area on the project site is mapped as riparian woodland, located approximately 600 feet north of the Bear River (along an abandoned ditch and the northern boundary of the southern area, see Figure 2). It occupies  $\pm 3$  acres of the south parcel. The land adjacent to the active channel of the Bear River is essentially the same as the oak woodland more throughout the entire south parcel.

We have chosen not to call the areas dominated by valley oak as riparian because of the lack of other riparian species and the dryness of the landscape. Most of the valley oak areas contain a sparse shrub layer and an herbaceous layer of obligate upland species, primarily weedy grasses. Floodplain oak woodland would be a better term (although these oak woodland areas no longer flood).

Vegetation. Plant species common to this non-wetland riparian area include cottonwood and black locust in the tree stratum, willow in the subcanopy stratum, Himalayan blackberry in the shrub stratum, and mugwort in the herbaceous stratum. (The herb layer is not well represented due to the high shrub cover.)

Wildlife. The riparian forested areas contain four strata which provide habitat for many species. Bird species utilizing the canopy and subcanopy include American kestrel, Nuttall's woodpecker, downy woodpecker, northern flicker, plain titmouse, bushtit, and white-breasted nuthatch. Species utilizing the shrub-layer within and adjacent to the forested areas include scrub jay, Bewick's wren, ruby-crowned kinglet, blue-gray gnatcatcher, northern mockingbird, and wren. And species found in the understory grasses and forbs included wild turkey, California quail, rufous-sided towhee, California towhee, and rufous-crowned sparrow.

Mammals typically occurring in riparian woodlands include mule deer, California ground squirrel, Audubon's cottontail, coyote, and western gray squirrel. Reptiles observed within the project site include western fence lizard, southern alligator lizard, common garter snake, and gopher snake. Amphibians observed include bullfrog and Pacific chorus frog and western toad.

## Other Habitats

Two large agricultural monocultures make up the balance of the study area. Walnut orchard occurs north of the river and rice occurs south of the river. Habitat value of these areas is minimal.

## SPECIAL STATUS SPECIES ASSESSMENT

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For purposes of this assessment, "special status" has been defined to include those species that are:

- 1) Listed as endangered or threatened under the federal Endangered Species Act (or formally proposed for, or candidates for, listing);
- 2) listed as endangered or threatened under the California Endangered Species Act (or proposed for listing);
- 3) designated as endangered or rare, pursuant to California Fish and Game Code (§1901);
- 4) designated as fully protected, pursuant to California Fish and Game Code (§3511, §4700, or §5050);
- 5) designated as species of concern by U.S. Fish & Wildlife Service (USFWS), or as species of special concern to California Department of Fish & Game (CDFG);
- 6) plants or animals that meet the definitions of rare or endangered under the California Environmental Quality Act (CEQA);
- 7) plants listed as rare under the California Native Plant Protection Act; or
- 8) plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1B and 2).

Results of the NDDDB query revealed that 9 special status plant and animal species were reported within the area of the Camp Far West, California 7.5' USGS topographic quadrangle and the three closest quadrangles.

Utilizing a combination of this query, pertinent scientific literature, and field evaluations, a total of 13 special status species were judged to have a potential to grow, nest, or otherwise occupy the site for all, or at least part, of their life cycle (CDFG 1999, 2000a, 2000b) (Table 2).

## Plants

The only special status plant species which any real potential occur on the project site is Big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*), a non-wetland oak woodland/grassland species. This species has no state or federal status but is listed by the



California Native Plant Society as a "List 1B," which means, "plants rare, threatened or endangered in California and elsewhere." This species has been searched for during the numerous field visits and has not been found.

## **Invertebrates**

### *Valley Elderberry Longhorn Beetle*

The Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) is associated with live elderberry shrubs, its exclusive host plant. It is listed as threatened by USFWS. The VELB's life history characteristics are assumed to follow a sequence of events similar to that of related taxa. The following is a brief life history discussion from information provided by the USFWS.

Adult VELB typically emerge in May but have been encountered from March through early June. After mating, female VELB deposit eggs in crevices on the bark of living elderberry plants. Upon hatching, VELB larvae bore into the pith of the elderberry, where they remain for up to two years. Mature larvae create an exit hole prior to pupation. Following pupation, adult VELB emerge from the elderberry through these holes. Adults can sometimes be found on elderberry foliage, flowers or stems, or on adjacent vegetation.

The presence of exit holes in elderberry stems is the accepted measure of VELB presence and habitat use, although all larger elderberry shrubs within the known range of the beetle are considered potential habitat and are protected under the Endangered Species Act. The beetle's range extends throughout California's Central Valley and associated foothills from about the 3000 foot elevation contour on the east and the watershed of the Central Valley on the west. All or portions of 31 counties are included.

Each elderberry plant was tagged, numbered, mapped and evaluated. The entire project site, including preservation areas, contains over 400 elderberry shrubs. Areas slated to be mined in the future contain, at present, 225 elderberry plants. Three individuals had characteristic signs of VELB presence.

Table 2. Special status species that could potentially occur on the project site.

Species	Federal	State	CNPS	Habitat	Potential for Occurrence
<b>Plants</b>					
Big-scale balsamroot <i>Balsamorhiza macrolepis</i>	--	--	1B	woodland and grassland	Not seen during field surveys. Survey period late spring.
<b>Invertebrates</b>					
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT	--	--	live elderberry shrubs	Possible as the site contains numerous shrubs. Six individual plants showed signs of presence (exit holes).
<b>Birds</b>					
Cooper's hawk <i>Accipiter cooperii</i>	--	CSC	--	woodlands and riparian edge habitat	Site contains suitable habitat. Not observed on site during field surveys.
Northern harrier <i>Circus cyaneus</i>	--	CSC	--		Unlikely nester, but foraging habitat exists on site. Not observed during field surveys.
Swainson's hawk <i>Buteo swainsoni</i>	--	CT	--	riparian woodland	Site contains suitable habitat. Not observed on site during field surveys.
White-tailed kite <i>Elanus leucurus</i>	MNBMC	CFP	--	grassland, woodland	Site contains suitable habitat. Not observed on site during field surveys.
Burrowing owl <i>Athene cunicularia</i>	MNBMC	CSC	--	grasslands	Site contains suitable habitat. Not observed on site during field surveys.
Loggerhead shrike <i>Lanius ludovicianus</i>	MNBMC	CSC	--	grassland, woodland	Site contains suitable habitat. Not observed on site during field surveys.
Bank swallow <i>Riparia riparia</i>	MNBMC	CT	--	vertical banks along waterways	Nesting colony observed along edge of project site during June 2000 field survey.
Tricolored blackbird <i>Agelaius tricolor</i>	MNBMC	CSC	--	marsh, riparian thicket, & grassland	Marginal habitat exists on site. Not observed during surveys.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	MNBMC	CE	--	riparian woodland	Marginal habitat exists on site. Not observed on site during field surveys.
Yellow warbler <i>Dendroica petechia</i>	MNBMC	CSC	--	riparian habitats	Possible, as riparian area contains suitable nesting habitat. Not seen on site during surveys.
Yellow-breasted chat <i>Icteria virens</i>	--	CSC	--	riparian habitats	Possible, as riparian area contains suitable nesting habitat. Not seen on site during surveys.

Federal: FE = Endangered FT = Threatened FSC = Species of special concern MNBMC = U.S. Fish & Wildlife Service -- Migratory Nongame Birds of Management Concern

State: CE = Endangered CT = Threatened CSC = California species of concern CFP = Fully protected by CDFG code

CNPS: 1B = Rare, threatened, or endangered in California and elsewhere 2 = Rare in California, more common elsewhere

## Vertebrates

Special-status bird species with potential to nest on the site are listed below. Surveys for these species have been conducted incidentally (during the elderberry surveys, and other activities where a biologist needed to be on-site). Further surveys may be needed prior to impacts.

Burrowing owl. Burrowing owl (*Speotyto cunicularia*) is a California Department of Fish and Game species of special concern. Burrowing owls typically utilize abandoned ground squirrel (or other mammal) burrows within open grasslands in the Central Valley. They may feed upon insects, small rodents, and lizards. Suitable nesting habitat exists on site but none have been observed.

Loggerhead shrike. Loggerhead shrike (*Lanius ludovicianus*) is a California Department of Fish and Game species of special concern. It nests within woodland habitats and forages on open habitats throughout California. Suitable nesting habitat exists on the site but none have been observed.

White-tailed kite. White-tailed kite (*Elanus leucurus*) is fully protected according to California Fish and Game Code. This species nests in riparian and oak woodlands within the Central Valley and Coast Range typically during May through August. White-tailed kite forage on open grasslands and savanna habitats. Suitable nesting habitat exists on site but none have been observed.

Cooper's hawk. Cooper's hawk (*Accipiter cooperii*) is a California Department of Fish and Game species of special concern and has no federal special-status. Typical nesting and foraging habitat includes riparian woodland, dense oak woodland, and other woodlands near water. Breeding generally occurs in the Sierra Nevada and Coast Range foothills, but in recent years Cooper's hawk have been found nesting in the Central Valley. Suitable nesting habitat exists on site but none have been observed.

Northern harrier. Northern harrier (*Circus cyaneus*), has no federal status and is a California Department of Fish and Game species of special concern. It is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. Nesting substrate includes emergent wetlands and open grasslands. Foraging occurs within a variety of open habitats. This species may forage on the project site but nesting potential is low.

Swainson's hawk. The Swainson's hawk (*Buteo swainsoni*) is a threatened species pursuant to the California Endangered Species Act, but has no federal status. Swainson's hawk nest in North America (Canada, western United States, and Mexico) and winter in South America (mainly Argentina). The breeding season generally occurs between mid-March and late-August. Typical nesting areas within the Central Valley include riparian woodland, roadside trees and isolated trees within agricultural zones. Most common nest trees include cottonwoods, willows, valley oak, and walnut. In general, foraging habitat includes open grassland, low-cover row crops and livestock pasture. Alfalfa, disked fields, and fallow fields are preferred foraging habitats within the Central Valley. Suitable nesting habitat appears to exist but the site is on the fringe of the local nesting range. None have been observed during the surveys.

Western yellow-billed cuckoo. Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a state-listed endangered species. Typical habitat includes dense riparian thicket/woodland. This migratory species arrives from its wintering grounds in South America during June and departs from California during September. In northern California, current nesting populations occur along the upper Sacramento River (Tehama, Butte, Colusa, Glenn and Sutter County), Feather River, and the Butte Sink (Sutter and Butte County). Nesting potential is very low. None have been observed during the surveys.

Bank swallow. Bank swallow (*Riparia riparia*) is a state-listed threatened species and has no federal special-status. This species occurs along rivers and creeks where exposed vertical banks are utilized for nesting. Burrows are typically excavated in steep banks that have friable soils. Nesting occurs during May through July. A bank swallow colony (approximately 25 nesting pairs) was observed during a June 2000 field visit. A field visit in late July revealed that the birds had departed the area. The colony is/was located on the north side of the Bear River in the northeast quarter of the northwest quarter of Section 31, Township 14 N, and Range 6 E (39° 01' 31" N 121° 21' 09" W) (Figure 3).

Yellow warbler. Yellow warbler (*Dendroica petechia*) is a California Department of Fish and Game species of special concern. Yellow warblers nest in a variety of habitats, but the common denominator is wet riparian thickets including willows and blackberry tangles. Nesting habitat exists in a few locations where riparian vegetation is dense. None were observed during the surveys.

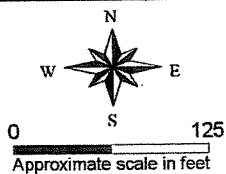
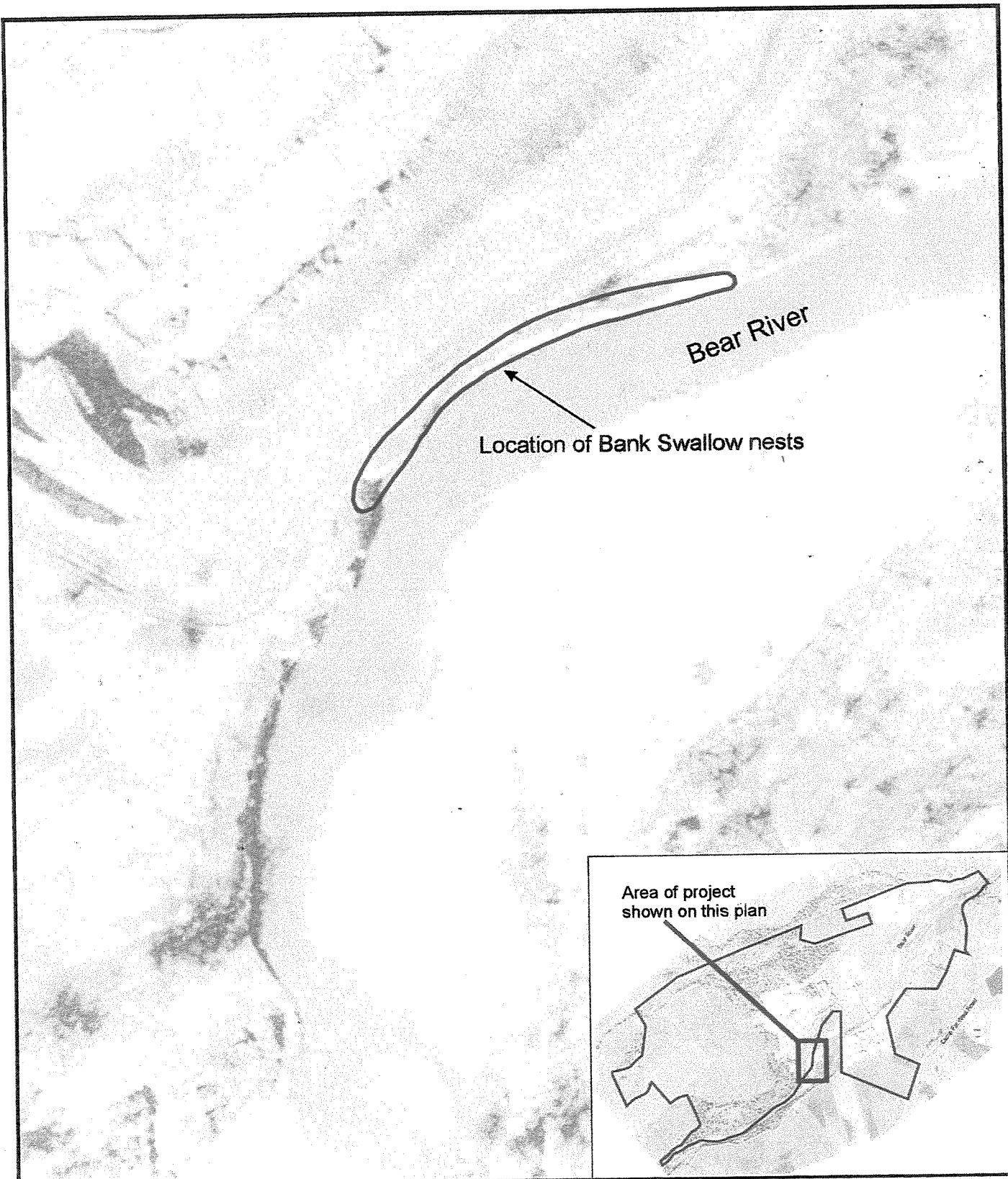
Yellow-breasted chat. Yellow-breasted chat (*Icteria virens*) is a California Department of Fish and Game species of special concern. Yellow-breasted chat nest in North America and winter in Mexico and Guatemala. This warbler typically nests within thick riparian scrub habitat in lower to middle elevations. Nesting occurs during May through August. Nesting occurs during May through August. Nesting habitat exists in a few locations where riparian vegetation is dense. None were observed during the surveys.

Tricolored blackbird. Tricolored blackbird (*Agelaius tricolor*) is a California Department of Fish and Game species of special concern. This colonial nesting species is distributed widely throughout the Central Valley and Coast Range. Suitable nesting habitat includes emergent marsh, willow thickets, blackberry thickets, and tall herbs. Open grassland and agricultural fields are characteristic foraging areas. Nesting occurs during April through July. Potential nesting habitat on the project site is marginal due to the lack of water. None were observed during the surveys.

## CONCLUSIONS

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The Patterson Sand and Gravel/Damon Orchard Expansion project site has been evaluated for habitat types, special status species, and wetlands. Three habitat types have been identified; oak woodland, annual grassland, and riparian woodland. The most common tree species in the oak woodland is valley oak. Interior live oak, foothill pine, California black walnut, and cottonwood are also well represented. The annual grassland is dominated by typical non-native species such as ripgut brome, soft chess, rose clover, and telegraph weed. One area of riparian woodland (non-wetland) exists along the northern boundary of the southern parcel.



Photograph Date: 1-27-2000 by Towill, Inc.  
Project Number: 1391

**Figure 3**

**BANK SWALLOW NESTING AREA**

June 2000

*Patterson Sand and Gravel*  
Placer and Yuba Counties, California

This woodland contains many large cottonwood trees and few oaks. The subcanopy and shrub layers are dominated by willow and Himalayan blackberry.

Based on the criteria outlined in this document, the site provides potential habitat for thirteen special-status species including one plant species, one invertebrate species, and eleven bird species (see Table 2). Slightly less than one-half of approximately 400 elderberry plants are located in proposed preserve areas. Elderberry shrubs with stems greater than one inch in diameter at ground level are considered habitat for the federally threatened Valley elderberry longhorn beetle.

A bank swallow colony was located during early summer 2000 surveys. The colony occurs along the eroding banks of the Bear River and was estimated at approximately 25 nesting pairs.

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**Appendix A**  
**Plant Species Observed on the**  
**Patterson Sand and Gravel/Damon Estate Project Site**  
**August 1996-July 2000**

<b>Scientific Name</b>	<b>Common Name</b>
<i>Aegilops triuncialis</i>	Barbed goatgrass
<i>Aesculus californica</i>	California buckeye
<i>Ailanthus altissima</i>	Tree-of-heaven
<i>Aira caryophyllea</i>	Hairgrass
<i>Alnus rhombifolia</i>	White alder
<i>Amaranthus blitoides</i>	Prostrate amaranth
<i>Ambrosia psilostachya</i>	Naked-spike ragweed
<i>Amsinckia menziesii</i>	Rancher's fireweed
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Arctostaphylos viscida</i>	White leaf manzanita
<i>Aristolochia californica</i>	Pipevine
<i>Artemisia douglasiana</i>	Mugwort
<i>Asclepias speciosa</i>	Showy milkweed
<i>Asparagus officinalis</i>	Asparagus
<i>Avena barbata</i>	Slender wild oat
<i>Baccharis pilularis</i>	Coyotote bush
<i>Baccharis salicifolia</i>	Sticky false-willow
<i>Brassica nigra</i>	Black mustard
<i>Brickellia californica</i>	Brickellbush
<i>Brodiaea elegans</i>	Elegant brodiaea
<i>Brodiaea species</i>	Brodiaea
<i>Bromus diandrus</i>	Ripgut brome
<i>Bromus hordeaceus</i>	Soft brome
<i>Bromus madritensis</i>	Red brome
<i>Carex barbarae</i>	Santa barbara sedge
<i>Carex species</i>	Sedge
<i>Ceanothus cuneatus</i>	Buck brush
<i>Centaurea solstitialis</i>	Yellow star thistle
<i>Centaureum venustum</i>	Charming centaury
<i>Cephalanthus occidentalis</i>	Common buttonbush
<i>Cerastium glomeratum</i>	Mouseear chickweed
<i>Cercis occidentalis</i>	Western redbud
<i>Chamomilla suaveolens</i>	Pineapple weed
<i>Chenopodium album</i>	Pigweed
<i>Chenopodium ambrosioides</i>	American wormseed
<i>Chlorogalum pomeridianum</i>	Large soap plant
<i>Cichorium intybus</i>	Chicory
<i>Cirsium vulgare</i>	Bull thistle
<i>Clarkia species</i>	Clarkia
<i>Claytonia perfoliata</i>	Miner's lettuce
<i>Convolvulus arvensis</i>	Morning glory



*Conyza canadensis*  
*Cynodon dactylon*  
*Cynosurus echinatus*  
*Cyperus eragrostis*  
*Cyperus species*  
*Dichelostemma capitatum*  
*Dichelostemma multiflorum*  
*Echinochloa crusgalli*  
*Epilobium brachycarpum*  
*Equisetum species*  
*Eremocarpus setigerus*  
*Eriodictyon californicum*  
*Erodium botrys*  
*Eschscholzia californica*  
*Ficus carica*  
*Fraxinus latifolia*  
*Galium species*  
*Geranium molle*  
*Hemizonia fitchii*  
*Heteromeles arbutifolia*  
*Heterotheca grandiflora*  
*Holocarpha virgata*  
*Hordeum marinum*  
*Hordeum murinum*  
*Hypericum perforatum*  
*Hypochaeris glabra*  
*Juglans californica*  
*Juncus balticus*  
*Juncus bufonius*  
*Lactuca serriola*  
*Lamium amplexicaule*  
*Leontodon taraxacoides*  
*Lolium perenne*  
*Lotus purshianus*  
*Lupinus bicolor*  
*Madia anomala*  
*Marrubium vulgare*  
*Medicago polymorpha*  
*Melilotus alba*  
*Mollugo verticillata*  
*Muhlenbergia rigens*  
*Myosurus minimus*  
*Paspalum dilatatum*  
*Petrorhagia dubia*  
*Phalaris species*  
*Phoradendron macrophyllum*  
*Phoradendron villosum*  
*Pinus ponderosa*

Canada horseweed  
 Bermuda grass  
 Dogtail grass  
 Tall flatsedge  
 Flatsedge  
 Blue dicks  
 Wild hyacinth  
 Barnyard grass  
 Panicked willow-herb  
 Horsetail  
 Turkey mullien  
 Yerba santa  
 Filaree  
 California poppy  
 Fig  
 Oregon ash  
 Bedstraw  
 Hairy geranium  
 Fitch's spikeweed  
 Toyon  
 Telegraph weed  
 Sticky tarweed  
 Mediterranean barley  
 Barley  
 Klamath weed  
 Smooth cat's-ear  
 California black walnut  
 Baltic rush  
 Toad rush  
 Prickly lettuce  
 Henbit  
 Hairy hawkbit  
 Perennial ryegrass  
 Bird-foot trefoil  
 Bicolored lupine  
 White tarweed  
 Common horehound  
 Bur clover  
 White sweetclover  
 Indian chickweed  
 Deergass  
 Tiny mouse-tail  
 Dallisgrass  
 Petrorhagia  
 Canary grass  
 Big leaf mistltoe  
 Oak mistletoe  
 Ponderosa pine

*Pinus sabiniana*  
*Plantago lanceolata*  
*Poa annua*  
*Populus fremontii*  
*Quercus lobata*  
*Quercus wislizenii*  
*Raphanus sativus*  
*Rhamnus californica*  
*Robinia pseudoacacia*  
*Rosa californica*  
*Rubus discolor*  
*Rubus ursinus*  
*Rumex acetosella*  
*Rumex crispus*  
*Rumex pulcher*  
*Salix exigua*  
*Salix gooddingii*  
*Salix lasiolepis*  
*Sambucus mexicana*  
*Senecio vulgaris*  
*Sorghum halepense*  
*Stellaria media*  
*Taeniatherum caput-medusae*  
*Torilis arvensis*  
*Toxicodendron diversilobum*  
*Tribulus terrestris*  
*Trichostema lanceolatum*  
*Trifolium hirtum*  
*Trifolium species*  
*Urtica dioica*  
*Verbascum blattaria*  
*Verbascum thapsus*  
*Verbena bonariensis*  
*Vicia species*  
*Vicia villosa*  
*Vitis californica*

Foothill pine  
 English plantain  
 Annual bluegrass  
 Fremont cottonwood  
 Valley oak  
 Interior live oak  
 Wild radish  
 Coffeeberry  
 Black locust  
 California rose  
 Himalaya blackberry  
 California blackberry  
 Sheep sorrel  
 Curly dock  
 Fiddle dock  
 Sandbar willow  
 Goodding's willow  
 Arroyo willow  
 Mexican elderberry  
 Common groundsel  
 Johnson grass  
 Common chickweed  
 Medusahead grass  
 Hedge parsley  
 Poison oak  
 Puncture vine  
 Vinegar weed  
 Rose clover  
 Clover  
 Stinging nettle  
 Moth mullein  
 Common mullein  
 South American vervain  
 Vetch  
 Winter vetch  
 California wild grape

**Appendix B**  
 Animal Species Observed on the  
 Patterson Sand and Gravel/Damon Estate Project Site  
 August 1996-July 2000

**Reptiles**

Common garter snake  
 Gopher snake  
 Southern alligator lizard  
 Western fence lizard  
 Western skink

*Thamnophis sirtalis*  
*Pituophus catenifer*  
*Gerrhonotus multicarinatus*  
*Sceloporus occidentalis*  
*Eumeces skiltonianus*

**Mammals**

Black-tailed jackrabbit  
 California ground squirrel  
 Coyote  
 Mule deer

*Lepus californicus*  
*Spermophilus beecheyi*  
*Canis latrans*  
*Odocoileus hemionus*

**Birds**

American crow  
 American goldfinch  
 American kestrel  
 Anna's hummingbird  
 Bank swallow  
 Bewick's wren  
 Brewer's blackbird  
 Brown-headed cowbird  
 Bushtit  
 California quail  
 Cooper's hawk  
 European starling  
 Great horned owl  
 House finch  
 House sparrow  
 Killdeer  
 Mourning dove  
 Northern mockingbird  
 Northern flicker  
 Nuttall's woodpecker  
 Red-shouldered hawk  
 Red-tailed hawk  
 Ring-necked pheasant  
 Ruby-crowned kinglet  
 Rufous-sided towhee  
 Scrub jay  
 Turkey vulture  
 Western bluebird  
 Western kingbird  
 Western meadowlark  
 Wild turkey  
 Animal List

*Corvus brachyrhynchos*  
*Carduelis tristis*  
*Falco sparverius*  
*Calypte anna*  
*Riparia riparia*  
*Thryomanes bewickii*  
*Euphagus cyanocephalus*  
*Molothrus ater*  
*Psaltiriparus minimus*  
*Callipepla californica*  
*Accipiter cooperii*  
*Sturnus vulgaris*  
*Bubo virginianus*  
*Carpodacus mexicanus*  
*Passer domesticus*  
*Charadrius vociferus*  
*Zenaida macroura*  
*Mimus polyglottos*  
*Colaptes auratus*  
*Picoides nuttallii*  
*Buteo lineatus*  
*Buteo jamaicensis*  
*Phasianus colchicus*  
*Regulus calendula*  
*Pipilo erythrophthalmus*  
*Aphelocoma caerulescens*  
*Cathartes aura*  
*Sialia mexicana*  
*Tyrannus verticalis*  
*Sturnella neglecta*  
*Meleagris gallopavo*



**PATTERSON SAND & GRAVEL  
REVISED  
BIOLOGICAL MITIGATION PLAN  
Placer and Yuba Counties, California**

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**April 2001**

**PATTERSON SAND & GRAVEL  
REVISED BIOLOGICAL MITIGATION PLAN**

**APRIL 2001**

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# **PATTERSON SAND & GRAVEL REVISED BIOLOGICAL MITIGATION PLAN**

**April 18, 2001**

## **INTRODUCTION**

---

Patterson Sand and Gravel proposes to conduct an expanded phased excavation for production of sand and gravel on an 884 acre site along the Bear River in Placer and Yuba Counties, California. Approximately 365 acres are included in the expansion area, in addition to 326 acres currently authorized for mining under existing permits. The remaining 193 acres of the site will be preserved.

The mining will be conducted in phases. Phase 1 is currently being mined under existing permits. Six additional phases (for a total of seven) are planned over the next sixty years. Mined aggregate will be processed onsite and trucked offsite. Sand and gravel mining is expected to take place through year 2060.

North Fork Associates has assisted Patterson Sand & Gravel and Carlton Engineering in the development of a conceptual Biological Mitigation Plan for the proposed mine expansion area.

The intent of this plan is to establish the mitigation framework for the ongoing reclamation of the site and to provide the basic mitigation/reclamation program for analysis in the EIR. Reclamation will occur concurrent with mining activities. The second (future) component of this plan would include a specific mitigation program for each phase detailing all specific issues necessary to carry out the program. Details will include specific plant palette, irrigation detail, planting timing and technique, etc.

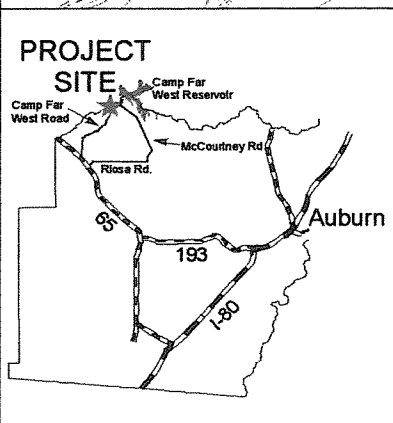
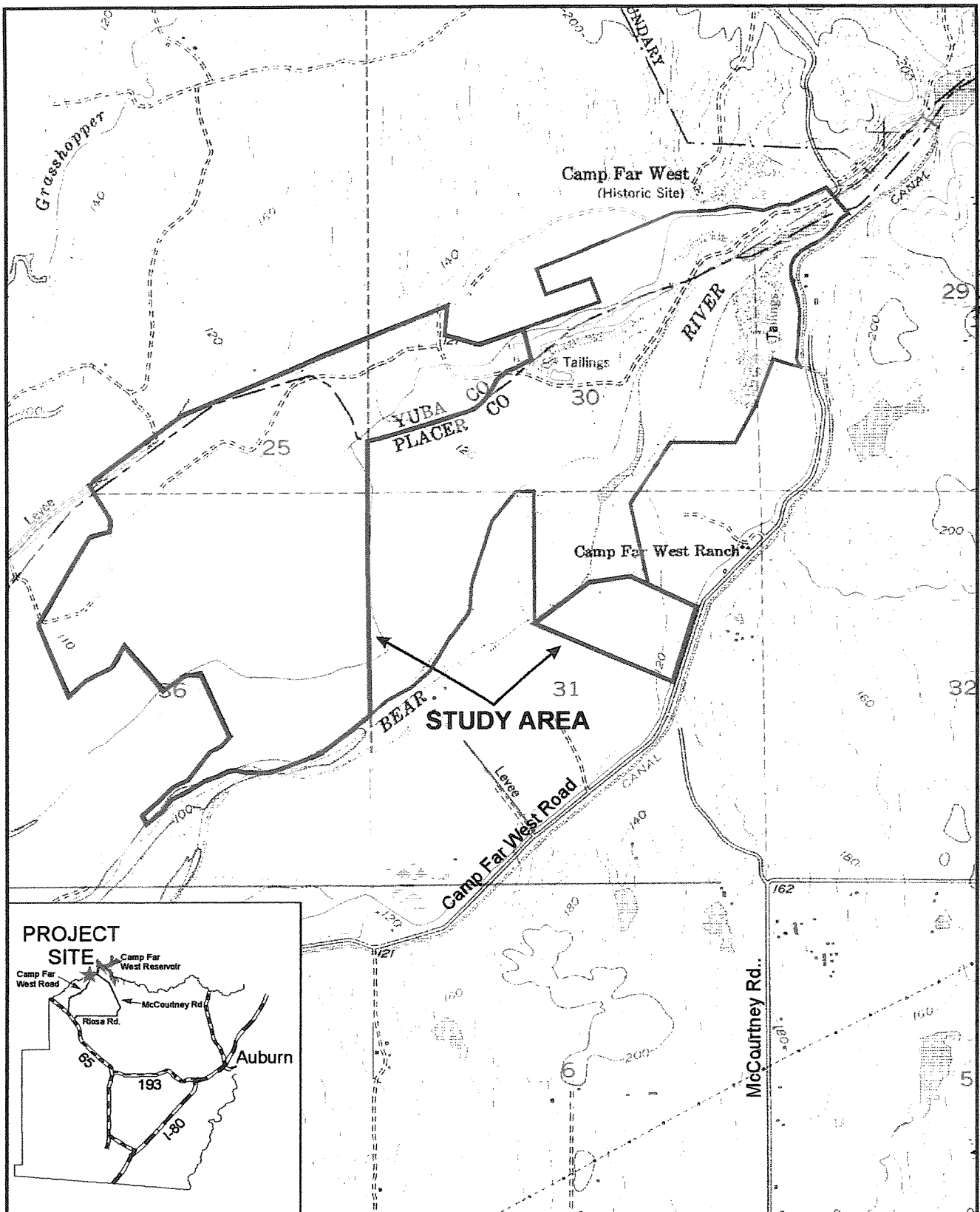
## **PROJECT AREA**

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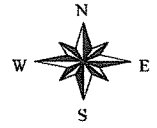
The project site is located north and south of the Bear River, in its historic floodplain. All current and proposed mining will occur outside of waters of the United States (above the ordinary high water mark) (Figure 1).

The entire area contains deep, coarse soils, primarily sand and larger grained material. In the nineteenth century, placer mining in the Sierra Nevada Mountains washed a huge amount of sediment down the Bear River drainage, leaving deep deposits in the project area. Since Camp Far West Dam was constructed in 1962, periodic high flood flows were reduced which in turn effectively squeezed the river into a narrower corridor. Highest release out of Camp Far West during the January 1997 floods was approximately 34,000 cubic feet per second. These flows were relatively contained and the riverbed maintained its current location.

The project area is located on a high bench adjacent to the river. The river elevation is approximately 91 feet above sea level and the relatively flat adjoining bench, currently supporting oak woodland and walnut orchard, is approximately 113 feet above sea level.



0 1000 2000  
Approximate scale in feet



Camp Far West USGS 7.5 minute  
topographic quadrangle

**Figure 1**

**VICINITY AND  
LOCATION MAP**

*Patterson Sand and Gravel*  
Placer and Yuba Counties, California



The deep coarse soils of the floodplain support annual grassland and oak woodland vegetation. Valley oak is the most common tree species. Shrubs are also abundant in many areas. The project area contains elderberry shrubs. The habitat types in the expansion area are described briefly below and in more detail in the Biological Resources Assessment Report, dated November 2000.

## MITIGATION PLAN ELEMENTS

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The basic concept of the proposed mitigation plan is to create a valley oak-riparian woodland along the Bear River concurrent with mining. Compensation for impacts to existing habitats will be implemented incrementally about 1.5 years in advance of actual impacts. It is probable that valley oak woodland was the primary habitat type in the area now actively mined. The reclaimed habitat will consist predominately of valley oak but contain numerous native associate species, including interior live oak, foothill pine, cottonwood, white alder, Oregon ash, and other riparian components. A large elderberry mitigation area will be established in the early phase of the reclamation.

A mosaic of habitat types will be created along the edge of the reclaimed mined areas to provide variable landforms and plant and wildlife habitat. These reclaimed habitats were designed to enhance the future habitat values of the Bear River corridor by creating foraging, nesting, resting, and escape cover for waterfowl and non-game wildlife. The created habitats will include open water, emergent marsh, riparian, elderberry, oak woodland and oak savanna habitat, and will feature a combination of benches and terraces, gradual slopes, an irregular shoreline with shallow inlets, and steep faces. Mined slopes will be reclaimed and habitat created concurrent with mining activity.

Habitat zones will be based on plant rooting depths to the seasonally fluctuating groundwater table. Benches, terraces, and gradual slopes will be constructed at variable elevations within the range of mean winter and summer groundwater levels in areas with suitable surface water and groundwater hydrology to support emergent marsh or riparian plant communities. Habitat zones have been designed to encourage natural, sustainable vegetation that will not require supplemental irrigation. Pilot plantings of various native species will be installed to increase revegetation and colonization rates and to promote species diversity. Upland slopes and terraces will be planted with woody native species or seeded with an appropriate native and naturalized grassland seed mix. The elevation of habitat benches and terraces has been set within a range of suitable hydrologic conditions for specific habitat types, based on estimated groundwater levels.

The mitigation program creates a habitat corridor where none currently exists. It maintains the linkage between the Southern and Central Preservation Areas by preserving a minimum 100-foot corridor of mature oak woodland habitat. New corridors will be created as the reclamation proceeds.

## **HABITATS**

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### **Oak Woodland**

Most of the oak woodland areas are dominated by valley oak. Drier locations well away from the river support interior live oak, while areas nearer the river support non-oak species including California black walnut, cottonwood, and tree of heaven. The oak woodland areas also support many shrub species including poison oak, Himalayan and California blackberry, California buckeye, white leaf manzanita, elderberry, buck brush, coyote bush, and coffeeberry.

### **Oak Savanna**

The oak savanna is typified by the dominance of non-native grass species, and many non-native non-grass species. Woody vegetation is lacking to sparse. Trees and shrubs are scattered throughout the grassland but do not occur in large enough numbers to be considered a woodland. Yellow star thistle, wild oat, ripgut brome, rose clover, tarweed, telegraph weed, hedge parsley, and filaree are among the most common species in this habitat.

### **Riparian Woodland**

One area on the project site is mapped as riparian woodland and is located approximately 600 feet north of the Bear River (along an abandoned ditch and the southern boundary of the large walnut orchard). It occupies approximately 3 acres. Plant species common to this non-wetland riparian area include cottonwood and black locust in the tree stratum, willow in the subcanopy stratum, Himalayan blackberry in the shrub stratum, and mugwort in the herbaceous stratum. The herb layer is not well represented due to the high shrub cover.

### **Agriculture**

In addition to impacts to the 3 habitats listed above, 261 acres of agricultural use (walnut orchard and rice) will be removed, mined and approximately 255 acres reclaimed to agriculture. No specific recommendations for agriculture reclamation are included in this plan.

## **PRESERVATION AREAS**

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Four preservation areas, totaling one-hundred ninety-three acres, will be maintained throughout the mining operation, including three oak woodlands and the Bear River corridor. The 3 oak woodlands, called "North Preservation Area," "Central Preservation Area," and "South Preservation Area," support relatively dense stands of mature oaks. Valley oak is the most abundant but interior live oak is common in the Central Preserve. The preservation corridor along the Bear River, called the "Bear River Preservation Corridor," consists of lands within the leveed floodplain of the Bear River. These lands are variable, but are generally open and lack dense stands of woody vegetation. Table 1 indicates the acreage of each preservation area.

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**Table 1. Preservation Areas.**

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<b>Preservation Area</b>	<b>Acreage</b>
North Preservation Area	11
Central Preservation Area	29
South Preservation Area	43
Bear River Preservation Corridor	110
<b>Total</b>	<b>193</b>

### **Preserve/Enhancement Area**

The northern portion of Phase 6 currently is slated for mining and reclamation to agriculture between years 2054 to 2056. This area contains remnant wetlands from former mining operations and an upland, open scraped area. The area is adjacent to the river on the land side of the levee. Depending on final configuration and need to reclaim to agriculture, this area (22 acres) would be appropriate to leave as is or, through enhancement measures, improve its quality. Because it is located along the river, it would add to the Bear River Preservation Corridor and the goal of improving the habitat quality of the river corridor. Flat upland areas on the parcel could provide habitat mitigation opportunity and may be considered for this function. The area is depicted on both Figures 2 and 3.

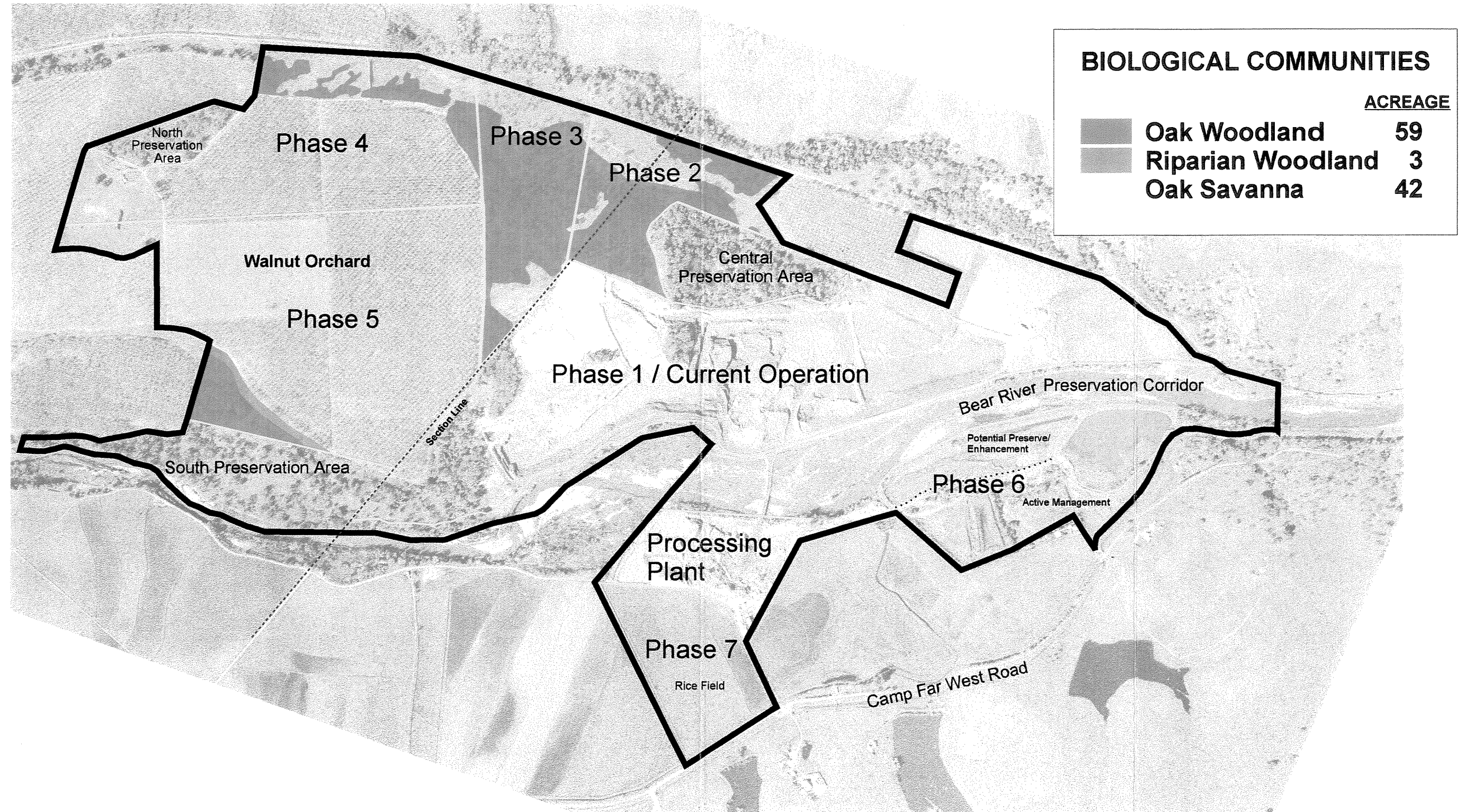
### **HABITAT IMPACTS**

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Three primary natural habitat types will be affected by the proposed mining expansion (Figure 2). These habitats and their existing acreages within the expansion area include:

- Oak woodland (142 acres)
- Oak savanna (42 acres)
- Riparian woodland (3 acres)

For each phase of the expansion area, the number of elderberry plants, approximate number of oak trees, and habitat type were enumerated. Table 2 summarizes impacts to each habitat type, including elderberries, for each phase.



**Notes:**  
 1. Approximately 269 acres of agricultural lands will be mined.  
 2. Preservation areas will not be mined.

0 1000  
 Approximate Scale in Feet

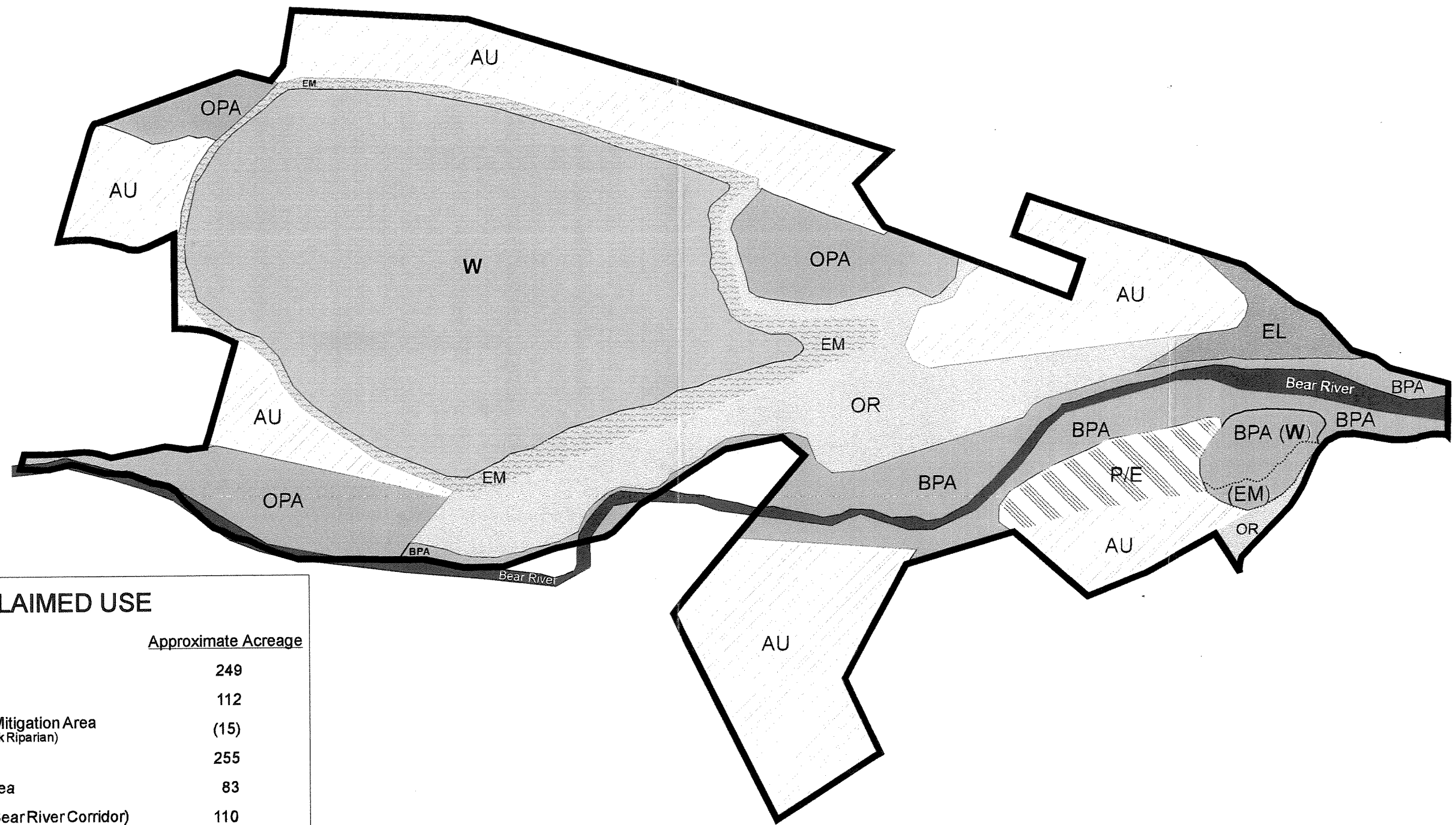


Photograph Date: 1-27-2000 by Towill, Inc.  
 Map Date: April 2001

Figure 2

**EXPANSION AREA HABITAT  
 IMPACT MAP WITH PHASING**  
*Patterson Sand and Gravel*  
 Placer and Yuba Counties, California





## RECLAIMED USE

### Approximate Acreage

<b>W</b>	Open Water	249
<b>OR</b>	Oak Riparian	112
<b>EL</b>	Elderberry Mitigation Area (included in Oak Riparian)	(15)
<b>AU</b>	Agricultural Use	255
<b>OPA</b>	Oak Preservation Area	83
<b>BPA</b>	Preservation Area (Bear River Corridor)	110
<b>EM</b>	Emergent Marsh	53
<b>P/E</b>	Potential Preserve/Enhancement Area	22



0 1000  
Approximate Scale in Feet

April 2001

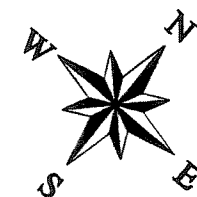


Figure 3

**FINAL RECLAMATION PLAN  
BIOLOGICAL COMPONENTS**  
*Patterson Sand and Gravel*  
Placer and Yuba Counties, California

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**Table 2. Habitat and Elderberry Impacts for each Phase.**

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Phase	Elderberry Impacts	Oak Tree Impacts	Oak Woodland Impacts	Oak Savanna Impacts	Riparian Woodland Impacts
1	141	Permitted	Permitted	Permitted	0ac
2	29	718	23ac	16ac	0ac
3	8	1110	27ac	13ac	0ac
4	13	502	2ac	13ac	0ac
5	29	267	7ac	0ac	3ac
6	8	Permitted	Permitted	Permitted	0ac
7	0	0	0ac	0ac	0ac
Totals	228	±2597	59ac	42ac	3ac

Over 400 elderberry plants occur on the project site. Impacts to 228 elderberry plants are proposed through the 7 phases (about 58% impact of existing elderberry shrubs on site).

Although all oak trees on the project site were not counted, the majority are preserved through Oak Tree Preservation Areas and the Bear River Preservation Corridor.

#### **COMPENSATION FOR HABITAT IMPACTS**

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This biological mitigation plan has been developed to account for loss of habitat resulting from the proposed project. Proposed natural habitat mitigation/reclamation area will be generally located along the north side of the Bear River. Inclusive in the overall mitigation/reclamation area will be the North Preservation Area, the Central Preservation Area, the South Preservation Area, and the Bear River Preservation Corridor.

Compensation for impacts to the 3 habitat types will occur in advance of the actual impacts. In general, the habitat will be constructed 1.5 years in advance of impact. This will lessen the temporal loss effect and insure continuous attention to habitat reconstruction. Table 3 indicates each natural habitat to be constructed and its associated acreage.

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**Table 3. Mitigation Components and Associated Acreage for each Habitat.**

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Habitat Type	Impacted Acreage	Mitigation Acreage
Oak Woodland/Savanna/Riparian	59/42/3	112
-Elderberry Habitat (included in above)	scattered	(15)
Emergent Marsh	0	53
Open Water	0	249
Oak Preservation Areas	0	83
Bear River Preservation Corridor	0	110
Potential Preserve/Enhancement Area	0	22

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The mitigation area will be established along the Bear River in areas currently unvegetated. A key concept of the mitigation plan is to reestablish a contiguous variable vegetated corridor along the Bear River. It is anticipated this corridor will create wildlife habitat and improve water quality runoff as it filters to the Bear River.

### **Oak Woodland/Riparian and Oak Savanna**

One hundred four acres of Oak Woodland, Oak Savanna, and Riparian Woodland that will be impacted will be compensated for by providing seventy-six acres of riparian Oak Woodland and thirty-six acres of riparian Oak Savanna habitat. This 112-acre "Oak Riparian" planting area includes 15 acres of Elderberry Habitat with oaks and other native species interspersed (Figure 3). Oak trees will be planted on 30-foot centers (average) in the oak woodland and 75-foot centers in the oak savanna. The different planting densities will be located and determined upon final site planning, based on the final landform.

Using these densities, approximately 4000 replacement oak trees will be planted on 112 acres. The estimated number of oak tree impacts is 2600 trees (Table 2). This makes the mitigation ratio for oak trees about 1.5:1. The total oak woodland/oak savanna/riparian woodland impact acreage is 104 acres and the total oak planting area is 112 acres (more than a 1:1 acreage ratio).

Oak stock will be grown from local acorns. Acorns will be planted directly into the ground in the mitigation area when mitigation is in advance of schedule. That is, if an area is prepared for future mitigation but is not yet needed, the applicant has the option of direct acorn planting from locally collected acorns. When the time comes to mitigate for impacts, the biological monitor will assess the sapling crop and determine if the young trees are adequate for required mitigation. If so, these trees will be counted towards mitigation credit. If the number of young trees are too few, container grown plants will be added until the appropriate number is reached.

Oak trees, along with all other revegetation species, will be planted by skilled workers using standard technique. Most of the planted habitat will be irrigated by water trucks from the adjacent levee road. Irrigation will occur by drip tubing where water trucks cannot service.

### **Riparian Woodland**

Riparian woodland impacts are 3 acres. The 112 acre Oak Riparian mitigation area provides ample opportunity to increase this area substantially, which will improve overall habitat values of the river corridor. Riparian zones will occur where the water table is seasonally high. This condition is present primarily along the eastern end of the large lake, where final grade will be a very gradual slope, providing a water gradient that will support a wide range of species. At least six acres of riparian woodland will be constructed in the Oak Riparian mitigation area to compensate for three acres of impact (2:1 ratio).

### **Emergent Marsh**

Although there is no impact to existing emergent marsh habitat, an opportunity is provided to create approximately 53 acres along the permanently inundated zone of the lake margin. It will consist of a shallow submerged bench averaging not less than 20 feet wide. A relatively flat slope (e.g., 20:1) will occur as the oak/riparian woodland area slopes from east to west into the

lake. Vegetation will volunteer naturally due to favorable hydrologic, soil, and slope conditions.

### **Elderberry Habitat**

Elderberry habitat will be established in a 15-acre compensation area at the east end of the project area. Two hundred twenty-eight elderberry shrubs will be impacted by the proposed project (all seven phases). The elderberry mitigation habitat will be established following U. S. Fish and Wildlife Service guidelines (July 1999) and final permit requirements for this project.

### **Open Water**

A lake approximately 249 acres will be the end use in the western portion of the project site. The lake will have an average surface elevation of 95 feet. Emergent marsh described above will ring the lake.

## **PERFORMANCE STANDARDS**

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Revegetation will occur continuously and at least 1.5 years in advance of mining operations for which the existing habitat will be removed. Compensation habitat will be established and maintained to insure that the appropriate number of trees and shrubs are being established, and that survivability is adequate to establish and maintain the target habitat.

Performance standards will be established for each habitat type being constructed.

### **Oak Woodland/Riparian**

- 70% survivability of trees planted on average 30' on center
- 50% survivability of native shrub species planted among oaks

### **Oak Savanna**

- 70% survivability of trees planted on average 75' on center
- 50% survivability of native shrub species planted among oaks

### **Riparian Woodland**

- Establishment of a minimum 6 acres of riparian woodland containing hydrophytic species in all strata (herb, shrub, sub-canopy and canopy)

### **Emergent Marsh**

- Establishment of emergent marsh vegetation along the lake fringe to an average width of at least 20' from the toe of the adjacent slope

### **Elderberry Habitat**

- Per permit guidelines set forth in the Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS 1999)



### **Open Water**

- Long term establishment of approximately 249 acres of open water

### **Preservation Areas**

- A conservation easement for each of the 4 preservation area shall be established

### **MONITORING PROGRAM**

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An annual monitoring program will occur for a minimum of 5 years after each phase of planting.

### **ANNUAL REPORTS**

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A Restoration Program monitoring report will be submitted to the County annually.